ECONOMIC CLIMATE

BRIGHT OUTLOOK, possibly leading to a boom in 1963, is foreseen for the U. S. economy. There's one admitted major continuing drag on business activity: unemployment—a big problem.

SHORT-TERM PROSPECTS are also improving. The auto industry—running about 11-percent behind last year—expects a pick-up in production. Construction, already spurred by a 12-percent increase in public works, is expected to show a net rise of four percent over the year. More expansion is coming in 1962 as residential building regains strength. Financing for business is expected to remain ample, though there is likely to be a mild hike in interest rates. A very substantial increase in corporate profits is expected this year compared to '60.

MANAGEMENT VIEW

FEDERAL INCOME TAX SUBSIDY ALONE, if we had it, would enable us to give free electric service to all residential and rural customers for six months of each year and come out with the same net income, says Dean H. Mitchell, chairman and president of No. Indiana P.S. Co. Opposing "favored treatment" of Hoosier Coop. Energy, Inc., he said: "It will be a shameful misuse of taxpayers' hard-earned money if a privileged few are permitted to go ahead with their plans to waste $60-million in Federal funds for the unnecessary duplication of electric power facilities." (Money from the 2% government loan would be used to build a 198,000-kw generating station, 1,400-miles of T & D facilities.)

COST TO PREFERENCE USERS "to go to the well themselves and bring the power home" would be much more than the price for which Arizona P.S. Co. stands ready to deliver Glen Canyon power to preference customers' load centers, states the utility's Pres. Walter Lucking. He notified Interior Secretary Udall of the offer (separate from a wheeling proposal) —as an alternative to the Bureau of Reclamation's plan to offer delivery at Pinnacle Peak, near Phoenix.

ATOMIC ENERGY CAN COMPETE, taking its place as an economic source of energy alongside natural gas, oil, falling water and geothermal steam to serve northern and central California, PG&E's Pres. Norman R. Sutherland declared in announcing the utility's new 325-megawatt Bodega Bay nuclear power project. He added: "The atom will achieve its important role in energy production . . . as economically and as reliably as available conventional fuels. And, as with all our atomic projects, we will build Bodega Bay with our own money. There will be no government subsidy or financial contribution from any other source."

DIVERSIFICATION IN NON-UTILITY enterprises is prominent in the future of the American & Foreign Power System, Pres. Henry B. Sargent has announced to shareowners. (Foreign Power's earnings are improving, despite the loss of income from its Cuban properties.) As part of its diversification in non-utility growth, the utility expects to invest over $100-million in Argentina and Mexico over a 15-year period.

WASHINGTON INFLUENCE

REA SELF-PROMOTION is being encouraged by the Agriculture Department. New instructions concerning making deals for large sales call for coop officials to "take an active part in promotion of effective power use activities that will result in increased kilowatt-hour sales under suitable rates and contracts." Coops should also "assist in promoting any prospective commercial or industrial service which appears to represent a desirable load for the system."

MOUNTAIN SHEEP is still an issue, despite FPC's order denying Washington Public Power Supply System's effort to obtain a license for the High Mountain Sheep site. Supporting the FPC position, Pacific Northwest Power Co. observed that the public power group has "ripened to the position that the mere assertion

of a so-called preference right entitles a party to disregard orderly process, to ignore rules and regulations of the Commission."

WEATHER MODIFICATION PROGRAM of the National Science Foundation made substantial progress in fiscal 1960. It has concentrated on basic research in an attempt to lay a solid groundwork for eventual control of the weather. Though promising leads have been uncovered, major problems remain unsolved. Primary among them is how to cope with the vast forces involved in even the simplest weather situation. Best hope for injecting beneficial measures into weather problems is attacking storms long before reaching severe stage.

INDUSTRIAL GROWTH of the areas served by TVA exceeded the country as a whole between 1929 and 1959, the public power agency claims. Statistics it has compiled show that over 30 years the TVA area progressed far more rapidly than the nation as a whole. TVA also noted that the average cost of steam-electric power production per kwhr on its system has decreased 44-percent from 1951 through 1960.

FPC CHAIRMANSHIP goes to Joseph C. Swidler on Sept. 1, when Jerome K. Kuykendall takes a spot as an FPC member. President Kennedy, at Swidler's suggestion, requested Kuykendall to remain as chairman for two months after Swidler joined the Commission, providing orderly transition.

INDUSTRY SIFTINGS

MIDWEST POWER POOLING has taken another big step with the recent announcement of four high-voltage interconnections that will create a Minnesota grid of 115,000-volt lines on the systems of Northern States Power, Minnesota P.&L. Co. and Otter Tail Power Co. Long-range goal of the Upper Mississippi Valley Power Pool is "the construction of every interconnection . . . that will cut overall costs."

EEI STUDY OF "NEAR," National Emergency Alarm Repeater system proposed for nation-wide alert in case of atomic attack, will help in determining role electric utilities will play in utilizing this proved method of public warning. Advocates of NEAR claim 95-percent of the country could be warned within less than a minute.

PIONEER IN COMPUTER USES, Public Service Elect. & Gas Co. (N. J.) is the first to use a new RCA all-transistorized electronic data processing system, described as "the world's fastest business computing system." Public Service will apply one RCA 601 and five 301 systems to company-wide operations, including customer billing, accounting for payroll, material in stores, depreciation studies and many research, engineering and operating functions. In another use, the utility company is employing one of the first of a new type of all-transistorized digital computers (developed by Leeds and Northrup and Philco) for generating station monitoring.

HIGH-PRICED MAJOR APPLIANCES find the greatest market potential among families with an average income of less than $7500, LOOK magazine has found in a recent survey of buying trends. More than half of all "top of the line" units in 1959-60 were bought by under-$7500 income families.

NEW NEMA "CODE OF ETHICS," aimed mostly at aiding member companies in anti-trust law compliance, declares an intention to guard the "freedom and independence" of manufacturers in marketing and pricing, including all terms of sale. Member needs triggered the Association's action on adoption of the "statement of principles." (See p. 60.)

"FINEST" FRINGE BENEFITS in the utility industry may be the lot of Commonwealth Edison employees, who get an average of $2110, adding up to a whopping $29-million annual corporate expenditure.

NEW LIGHTING LOAD potential getting attention from Union Electric of St. Louis, Mo., is the golf course. Utility experiment has given "good results."

PLAN FOR TRANSMISSION, YEAR 2000 AEP study for system needs ahead is now utilizing record EHV line (775,000-volts).

EL&P
ELECTRIC LIGHT AND POWER

32nd Annual Major-Appliance Survey

Across-the-board losses in 1960 versus 1959 sales of major electric appliances are revealed in EL&P's 32nd annual survey of industry performance in this important loadbuilding area.

ELECTRIC APPLIANCE SALES in 1960 reflected the setback suffered by the national economy during the year. Compared to 1959 performance, the industry rang up losses for the entire gamut of major appliances.

These adverse findings from EL&P's annual survey are brightened somewhat, however, by the fact that 1960 sales did materially exceed 1958 sales in all categories except water heaters.

The 1959-1960 comparative sales performance for U. S. utilities is shown in Table I.

A total of 152 U. S. utilities and five Canadian utilities contributed data for this report. However, composite analysis of the returns are confined to the U. S. group of utilities, which very nearly duplicated last year's respondents.

Sales records for all respondent utilities are given in detail in the accompanying tabulations.

Domestic electric customers served by the U. S. utilities which contributed data for this report total 40,610,677 as of Dec. 31, 1960—nearly 80 percent of the U. S. total of 50,098,857 residential customers reported by EEI for that date.

As brought out in Table II, the percentage of respondent utilities engaged in direct sales of appliances to the public decreased to 35% in 1960.

Analysis of composite figures for major appliances served by the respondent utilities as of Dec. 31, 1960, becomes more significant when compared with the report on 1959 performance. This is the score:

Appliance	Percent Acceptance 1959	1960
Ranges	26.8	30.6
Water Heaters	15.0	17.4
Dryers	10.8	13.6
Freezers	10.7	13.6
Air Conditioners	8.4	12.4

The foregoing tabulation helps to further brighten the picture of the industry's performance in 1960.

Big Jump In Electric Heating

Electric space-heating load continues to grow in importance, as evidenced by the data given in Table III. Promotion of electric space heating grows apace and its effectiveness is evidenced by the jump in total electric space-heating customers served by the respondent utilities—over 270,000 as against nearly 189,000 reported last year.

Commercial Cooking Activities

This year's study included a check

(Continued on page 34)

(Tabulations begin on next page)

TABLE I

Comparative Sales-Performance Record For Respondent Utilities

APPLIANCES	1959	1960	PERCENT CHANGE 1960 VS. 1959
Electric Ranges	1,164,479	1,095,820	— 5.96
Electric Water Heaters	574,548	513,706	—10.59
Electric Dryers	982,749	702,256	—28.54
Electric Home Freezers	631,745	622,550	— 1.45
Elec. Resid. Air Cond. (Room Units)	975,056	923,911	— 5.25
Elec. Heat Pump Systems	19,734	19,371	— 1.84

TABLE II

What's Happening In Utility Merchandising

YEAR	PERCENT OF RESPONDENT UTILITIES SELLING APPLIANCES TO THE PUBLIC
1960	35%
1959	37%
1958	36%
1957	33%
1956	39%

ELECTRIC LIGHT and POWER'S 32nd

UTILITIES	Domestic Electric Consumer on Resid. Rates, Dec. 31, 1960		Average Annual Kwh per Domestic Consumer		If Combined Gas/Electric Utility, Number of Domestic Gas Consumers 12/31/60	Est. % of Domestic Electric Consumers Having Piped Gas Available 12/31/60	ELECTRIC RANGES				ELECTRIC WATER HEATERS				ELECTRIC
							Total Sales in 1960		On Resid. Rates Dec. 31, 1960		Total Sales in 1960		On Resid. Rates Dec. 31, 1960		Total Sales in 1960	
	Number	Increase Over 12/31/59	12/31/60	Increase Over 12/31/59			By Utility	By Others	Number	Percent Acceptance	By Utility	By Others	Number	Percent Acceptance	By Utility	By Others
ALABAMA																
Alabama Power Co.	565,506	14,921	4,331	299		85.0	2,856	21,965	257,305	45.5	931	8,469	134,590	23.8	377	4,720
ARIZONA																
Arizona Public Service Co.	148,444	6,791	3,958	294	179,685	95.0	None	12,000	35,700	24.0	None	1,900	13,400	9.0	None	2,100
Salt River Power District	83,953	10,309	5,520	635	N.A.	85.0		8,296	28,000	35.0		1,829	12,000	15.0		992
Tucson Gas, Electric Light & Power Co., The	67,405	3,569	3,548	369	62,291	85.0		900		12.0		250		5.0		235
ARKANSAS																
Arkansas Power and Light Co.	254,474	5,453	2,661	242	N.A.	55.0		3,500		28.2		700		4.2		3,100
CALIFORNIA																
Bureau of Electricity, City of Alameda	14,808	397	2,501	105		99.0		400	4,700	32.0		10	500	3.0		350
California Electric Power Co.	92,902	3,164	3,097	337		70.0	407				345				101	
California-Pacific Utilities Co.	29,416	283	6,768	382	10,113	15.0		1,054		68.0		738		69.0		820
City of Burbank, Public Service Dept.	31,215	x20	2,800	180		100.0		140	8,480	27.5		10	774	2.5		95
City of Glendale, Public Service Dept.	44,778	739	2,550	200		100.0		656	15,719			42	1,066			
Dept. of Water and Power, City of Los Angeles	785,633	19,693	2,576	180		99.0		7,382	87,564	11.2		1,851	30,249	3.9		5,121
Imperial Irrigation District	23,632	460	7,294	591		75.0		300	7,900	38.0		200	5,800	24.0		120
Modesto Irrigation District	23,993	690	4,510	387		75.0										
Pacific Gas & Electric Co.	1,628,107	55,497	3,451	297	1,562,195	86.0	None	83,393	*491,240	29.5		15,123	151,450	10.1		48,930
Pasadena Municipal Light & Power Dept.	42,662		2,648	193		100.0	None	605	7,514	18.0	None	60	1,785	4.0	ag	
Sacramento Municipal Utility Dist.	142,598	8,554	4,193	372		85.0		9,774	59,796	37.7		1,585	15,232	10.7		9,595
San Diego Gas & Electric Co.	283,576	11,731	3,156	256	243,544	86.0		7,250	30,000	10.0		2,275	15,000	5.0		2,800
Southern California Edison Co.	1,412,577	59,321	2,690	205	N.A.	95.0	None	21,800	235,800	16.7	None	3,084	73,440	5.2	None	18,460
COLORADO																
Colorado Central Power Co.	32,672	2,603	3,225	221	None	75.0			21,600	66.0			2,259			
Public Service Co. of Colorado & Subsid.	282,838	10,201	2,993	152	288,278	80.0	338	8,700	N.A.	*21.0	109	2,000	N.A.	*6.0	45	7,200
Southern Colorado Power Co.	49,141	969	2,717	134	None	70.0	162	658	*11,300	26.0	81	104	5,092	12.0	114	432
CONNECTICUT																
Connecticut Light & Power Co., The	311,637	7,838	3,694	131	80,390	34.0	684	7,800	134,300	44.2	1,238	2,300	60,000	19.4	260	5,100
Hartford Electric Light Co., The	198,850	3,082	3,633	138	30,219		107	4,396	100,000	50.0	483	1,082	30,000	15.0	17	3,818
United Illuminating Co.	176,379	2,535	3,541	128		85.0		5,755	70,700	40.1		2,928	29,450	16.7		4,087
DELAWARE																
Delaware Power & Light Co.	80,594	1,290	3,901	87	57,043	70.8	88	1,000	25,800	32.0	51	400	12,500	15.5	79	300
DISTRICT OF COLUMBIA																
Potomac Electric Power Co.	314,645	8,506	3,623	49		95.0	None	8,964	78,317	q18.8	None	871	11,452	q2.7	None	7,750
FLORIDA																
Florida Power & Light Co.	654,378	41,563	4,716	419		15.0	None	32,364	367,110	56.1	None	55,756	393,935	60.2	None	7,682
Florida Power Corp.	248,533	18,244	4,488	351		100.0	None	19,531	151,943	62.7		19,919	163,741	63.4		3,976
Gulf Power Company	87,814	2,878	4,685	326	None	66.0	524	7,737	43,736	49.8	168	3,234	31,376	35.7	108	1,724
Tampa Electric Co.	136,248	4,430	5,188	348	N.A.	18.0	None	9,021	95,525	70.0	None	10,536	100,495	73.0	None	1,698
GEORGIA																
Georgia Power Co.	625,321	13,098	4,218	233	None	75.0	5,597	30,798	349,350	55.9	5,370	7,561	202,250	32.3	1,323	N.A.
HAWAII																
Hawaiian Electric Co., Ltd.	99,377	5,090	4,920	345		70.0		6,645	67,000	67.0		7,243	61,000	61.0		1,022
Hilo Electric Light Co., Ltd.	14,368	x240	3,084	207		15.0		337		60.0		431		54.0		108

NOTE: Omissions in tabulated data indicate corresponding omissions in data furnished by respondent utility. Appliance sales figures by other than utility are actual or estimated.

FOOT

Negl. Negligible
* Estimated
N.A. Not available
a. Resistance type only
b. Includes only compressor-type room units
c. Ranges only
d. 102,802 kw connected
e. Lost a few due to urban renewal and turnpike
f. Includes only utility sales
g. Includes combination washer-dryers
h. Data as of June 30, 1960
j. Employees only
k. Includes 40% heat pump customers
m. Utility financed
n. Bank financed
o. Sell only ranges and water heaters to public, all appliances to employees
p. Appliance tabulations include residential and farm
q. Appliance saturation based on 417,350 dwellings which includes 86,434 separately metered apartments and 95,165 master metered apartments
r. Sells water heaters only
s. No rural and farm
t. Central systems only
u. Ranges and water heaters to builders
v. 8 kw or over
w. Ranges, water heaters, dishwashers
x. Decrease
y. 359 complete homes and 336 partial homes (permanently installed)
z. Included under dryers
aa. Only when appliance is purchased from our company
ab. Our company does not do any direct selling nor do we keep records
ac. The company merchandizes electric ranges, water heaters and dryers in rural non-natural gas territory only

ANNUAL MAJOR APPLIANCE SURVEY

DRYERS		ELEC. WASHER-DRYERS				ELEC. HOME FREEZERS				ELEC. RESID. AIR COND.				ELEC. HEAT-PUMP SYSTEMS				ELECTRIC SPACE-HEATING		Utility's 1961 Electric Merchandising Policy		Have "Wire-On-Time" Plan?	
On Resid. Rates Dec. 31, 1960		Total Sales in 1960		On Resid. Rates Dec. 31, 1960		Total Sales in 1960		On Resid. Rates Dec. 31, 1960		Total Sales in 1960		On Resid. Rates in 1960		Total Sales in 1960		On Resid. Rates Dec. 31, 1960							
Number	Percent Acceptance	By Utility	By Others	Number	Percent Acceptance	By Utility	By Others	Number	Percent Acceptance	No. of Central Systems	Compressor-Type Room Units	Number	Percent Acceptance	By Utility	By Others	Number	Percent Acceptance	Types Being Actively Promoted	No. of Consumers Now Being Served	Sales to Public	Sales to Employees	Yes	No
40,716	7.2	39	1,785	af	af	475	16,337	101,226	17.9	2,800	21,722	113,667	20.1		726	2,176	0.4	All	3,480	Yes	Yes	m,n	
10,400	7.0	None	950	3,000	2.0	None	3,900	34,100	23.0	2,500	4,500	31,300	21.0	None	650	4,450	3.0	All	170	No	No	m	
9,600	12.0		540				2,167	16,000	20.0	2,880		28,000	35.0		1,945	4,000	5.0	All	1,505	No	Yes	m	
			260				1,000		12.0	150	1,000							None		No	Yes		X
	7.3				1.0		6,900		27.5		7,000		30.3		181		0.8	All	931	No	No		X
2,000	14.0		50	400	3.0		150	3,000	20.0	1	1				1	1		All	5	No	No		X
						13												a		Yes	Yes	aa,n	
	22.0		135				682		28.0	90	450				28			All		No	Yes		X
				51			18			8	310				6			All		No	No		X
																		None		No	No		
67,715	8.6	z					5,991	113,728	14.5	1,281	6,714	33,839	5.0		587	1,457	1.0	All	1,320	No	No	m	
475	2.0		40	40			300	4,700	20.0	400	1,500	14,000	60.0		200	500	2.0	♦	900				X
																				No	No		X
350,953	23.5		13,293	54,707	3.7		40,276	305,146	20.4	6,160	18,505	93,404	5.8		1,888	4,974	1.0	All	*24,000	No	No		X
		ag				ag				ag				aq				None	*180	No	No		X
62,590	39.5		2,160	9,292	6.5		3,332	43,846	27.7		11,131	27,698	19.4		82	222	0.2	All	1,400	No	Yes		X
30,000	10.0		1,325	2,500	2.0		6,000	60,000	20.0	516	3,480	16,131	2.9		221	1,016	0.3	None	18,050	No	Yes		X
149,700	10.6	None				None	28,550	259,900	18.4	25,100	None	113,000	8.0	None	1,065	4,900	0.3	All	5,600	No	No		X
2,450	7.5			2,450	7.5			7,200	22.0			632	1.9	None	None			a	24	No	Yes		X
N.A.	*20.0	68	2,500	N.A.		61	4,700	N.A.	*24.0		3,668	N.A.						None	39	ao	ao		X
*8,450	19.0	3	189	*1,300	3.0	30	543	*8,568	20.0	None	273	2,641	6.0	None	None	1		All	13	Yes	Yes	m	
g52,200	g17.0	100	900				2,300	48,500	16.0	75	3,400	26,550	8.5		20	28		All	401	ag	ag	m	
42,000	21.0						1,469	33,000	16.0	5	1,945	38,000	19.0			22	Negl.	All	154	Yes	Yes	X	
26,450	15.0		483		N.A.		1,743	14,800	8.4		1,934	14,100	8.0					a	104	No	Yes	m,at	
7,725	9.6	10	100	1,000	1.2	75	300	3,100	3.8	100	967	13,600	16.9	None	None	None	None	a	26	Yes	Yes		X
57,924	q13.9	None	1,203	N.A.	N.A.	None	6,040	60,401	q14.5	1,194	17,096	b143,336	q34.4	None	16	N.A.	N.A.	All	46	No	No		X
56,930	8.7	None	2,414			None	6,291	55,625	8.5	9,778	37,267	159,010	24.3	a†				None	aj	No	No		X
16,701	6.7	N.A.					3,100	21,577	8.7	2,945	8,294	54,160	21.8		1,802	4,800	1.9	a	d10,918	No	No		X
7,987	9.1	49	z			129	6,492	21,868	24.9	529	14,586	24,815	29.0		173	421	0.5	All	646	Yes	Yes	m	
10,838	8.0	None	320			None	2,021	28,230	21.0	287	6,411	41,790	30.8	None	820	2,392	1.7	All	3,724	No	No		X
50,025	*8.0	148	N.A.	N.A.	N.A.	1,234	N.A.	93,800	*15.0		f2,345	N.A.	N.A.		400	1,140	1.8	All	1,509	Yes	Yes	m	
13,000	13.0		300	4,000	4.0		2,379	16,000	16.0		656	2,000	2.0					aw	None	No	No		X
	7.0		30		1.0		467		38.0		13		2.0					None	None	No	No		X

NOTES

ad. Co-operate with small loan departments to encourage their making such loans
ae. West Virginia—82.5% of 241,956 customers
Virginia—34.2% of 192,068 customers
af. Included with automatic washers
ag. Sell ranges, water heaters, dryers, blankets, bulbs to customers and employees
ah. Finance plan available to employees only
aj. Since we do not promote or recommend the use of our service for resistance type space heating, we do not maintain a record of electric space heating consumers
ak. Electric washers only
am. No records maintained
an. Numbers too small to be of value
ao. Major appliances
ap. Do not merchandise
aq. No information available except for electric ranges and water heaters
ar. Basically baseboard, ceiling, wall panel and heat pumps
as. We are active in the sale and installation of commercial electric water heating
at. In conjunction with specific appliance promotions
au. Housewares only
av. Unknown
aw. Because of our climatic conditions, there is virtually no need for any type of heating; air conditioning, however, is actively promoted
ax. Public sales limited to school exchange appliances
ay. Sell only school loan equipment to employees and public through dealers
az. Available from dealers at special discount
† Special offers to employees through dealers
‡ Limited basis covering installation of new electrical appliances only
a† Included in central air conditioning systems
a‡ Classified as heating solely or principally by electricity—over 90% live in small rented apartments of 3 rooms or less
§ Limited
♦ Heat pump only

ELECTRIC LIGHT and POWER'S 32nd

UTILITIES	Domestic Electric Consumer on Resid. Rates, Dec. 31, 1960		Average Annual Kwh per Domestic Consumer		If Combined Gas/Electric Utility, Number of Domestic Gas Consumers 12/31/60	Est. % of Domestic Electric Consumers Having Piped Gas Available 12/31/60	ELECTRIC RANGES				ELECTRIC WATER HEATERS				ELECTRIC
							Total Sales in 1960		On Resid. Rates Dec. 31, 1960		Total Sales in 1960		On Resid. Rates Dec. 31, 1960		Total Sales in 1960
	Number	Increase Over 12/31/59	12/31/60	Increase Over 12/31/59			By Utility	By Others	Number	Percent Acceptance	By Utility	By Others	Number	Percent Acceptance	By Utility	By Others
IDAHO															
Idaho Power Co.	113,160	1,686	7,527	300	None	68.0	None	8,260	97,300	86.0	None	6,545	95,100	84.0	None	5,543
ILLINOIS															
Central Illinois Elec. & Gas Co. (Rockford Div.)	60,059	1,074	3,362	109	45,157	75.0	None	992	10,611	18.0	None	202	7,374	12.0	None	788
Central Illinois Public Service Co.	200,358	1,432	2,973	126	46,003	62.0		3,334	62,712	31.3		1,841	43,478	21.7		3,510
Commonwealth Edison Co.	1,853,298	37,556	3,023	69	None	94.0	552	16,100	N.A.	N.A.	800	3,700	109,098	5.9	383	19,000
Illinois Power Co.	313,605	3,641	3,483	101	179,882	58.0	23	4,190	103,300	33.0	12	835	75,100	24.0	2	4,520
INDIANA															
Indiana & Michigan Electric Co.	262,616	7,992	5,400	221	None	80.0	1,711	N.A.	N.A.	71.4	1,421	N.A.	N.A.	44.3	23	N.A.
Indianapolis Power & Light Co.	193,211	4,589	4,149	171		90.0	110	8,265	75,690	39.2	299	2,821	33,898	17.5	58	5,617
Public Service Co. of Indiana, Inc.	331,405	4,505	3,936	141		65.0	aq	am	181,809	54.9	aq	am	112,001	33.8	aq	am
Southern Indiana Gas & Electric Co.	61,541	261	4,104	167	41,812	67.7	83	1,303	N.A.	38.0	26	190	16,338	27.0	28	1,033
IOWA															
Interstate Power Co.	102,526	1,058	3,426	130	27,549	59.0	623	*2,000	88,365	31.0	316	500	88,365	38.0	404	*2,700
Iowa Electric Light & Power Co.	123,836	1,345	3,386	165	60,601	61.0	883	3,150	42,476	34.3	413	600	47,429	27.3	489	950
Iowa-Illinois Gas & Electric Co.	98,391	2,006	3,005	61	126,397	86.7	106			19.7	25			3.3	23	
Iowa Public Service Co.	108,143	1,221	3,362	121	74,005	85.0		1,411	N.A.	N.A.		349	N.A.	N.A.		1,596
Iowa Southern Utilities Co.	66,191	1,263	2,824	113	16,979	N.A.	273	*950	18,500	28.0	135	*500	13,000	20.0	112	*1,025
KANSAS															
Board of Public Utilities, Kansas City	37,835	eNone	2,758	35	None	99.9	None	500	6,500	17.0	None	10	800	0.2	None	125
Kansas Gas & Electric Co.	148,632	x232	3,522	89		95.0	42	3,357	46,221	33.2	22	635	4,066	3.0	25	3,270
Western Light & Tel. Co., Inc.	40,851	677	2,778	137	4,435	85.0		1,197	14,688	36.0		95	2,243	5.5		1,343
KENTUCKY															
Kentucky Power Co.	79,731	1,091	3,044	187		70.0	242	2,750	48,829	61.2	14	1,294	15,970	20.0	54	1,749
Kentucky Utilities Co.	201,064	3,380	3,016	109	None	*80.0		10,857	h89,442	41.5		4,268	h58,071	26.9		g4,984
Louisville Gas & Electric Co., Inc.	174,077	2,591	3,250	133	*155,795	89.0	None	3,950	34,600	19.9	None	1,500	16,093	9.2	None	2,560
LOUISIANA															
Central Louisiana Electric Co.	84,232	1,918	2,797	277	35,054	65.0	80	1,080	12,060	14.2	700	121	1,010	1.2	76	870
Louisville Power & Light Co.	219,583	7,768	3,411	403		85.0	None	4,100	37,927	17.3	None	500	10,742	4.9	None	4,200
New Orleans Public Service Co., Inc.	157,014	677	3,916	418	159,952	98.0		3,104	8,200	5.2		Negl.	Negl.	Negl.		1,263
Southwestern Electric Power Co.	175,967	3,108	3,210	328		98.0		3,252	175,967	11.0		596	175,967	2.2		2,427
MAINE															
Central Maine Power Co.	217,220	3,134	3,153	74		18.0		5,000				2,400	58,000	26.7		2,600
MARYLAND															
Baltimore Gas & Electric Co.	482,619	9,636	2,779	52	369,588	76.6	302	7,048	89,750	18.6	128	3,266	42,694	8.8	180	5,995
Eastern Shore Public Service Co.	64,334	1,124	2,938	45		42.0	42	*2,200	21,875	34.0	6	825	14,800	23.0	8	800
Potomac Edison Co., The	147,141	2,957	4,095	209		43.0	1,835	3,200	81,663	55.5	647	2,500	55,178	37.5	1,003	2,400
MASSACHUSETTS															
Boston Edison Co.	422,350	3,546	2,576	120		70.0	714	10,000	123,800	28.0	292	500	26,000	6.0	416	6,000
Brockton Edison Co.	61,378	1,977	3,303	113					731				945			
Fitchburg Gas & Electric Light Co.	16,655	289	2,436	77	10,329	74.0	90	80	2,108	12.9	41	30	1,167	7.1	89	100
Gas & Electric Dept., City of Holyoke	17,648	94	1,972	88		78.5	am	am	am	am	am	am	am	am	am	am
New England Electric System	749,269	9,973	2,513	105	226,168	75.0	4,200	11,000	245,000	32.7	1,654	2,000	54,500	7.3	1,838	6,000
Western Massachusetts Electric Co.	124,081	1,170	3,122	119		85.0			59,127	47.7			15,328	12.4		

NOTE: Omissions in tabulated data indicate corresponding omissions in data furnished by respondent utility. Appliance sales figures by other than utility are actual or estimated.

FOOT

Negl. Negligible
* Estimated
N.A. Not available
a. Resistance type only
b. Includes only compressor-type room units
c. Ranges only
d. 102,802 kw connected
e. Lost a few due to urban renewal and turnpike
f. Includes only utility sales
g. Includes combination washer-dryers
h. Data as of June 30, 1960
j. Employees only
k. Includes 40% heat pump customers
m. Utility financed
n. Bank financed
o. Sell only ranges and water heaters to public, all appliances to employees
p. Appliance tabulations include residential and farm
q. Appliance saturation based on 417,350 dwellings which includes 86,434 separately metered apartments and 95,165 master metered apartments
r. Sells water heaters only
s. No rural and farm
t. Central systems only
u. Ranges and water heaters to builders
v. 8 kw or over
w. Ranges, water heaters, dishwashers
x. Decrease
y. 359 complete homes and 336 partial homes (permanently installed)
z. Included under dryers
aa. Only when appliance is purchased from our company
ab. Our company does not do any direct selling nor do we keep records
ac. The company merchandizes electric ranges, water heaters and dryers in rural non-natural gas territory only

ANNUAL MAJOR APPLIANCE SURVEY

DRYERS		ELEC. WASHER-DRYERS				ELEC. HOME FREEZERS				ELEC. RESID. AIR COND.				ELEC. HEAT-PUMP SYSTEMS				ELECTRIC SPACE-HEATING		Utility's 1961 Electric Merchandising Policy		Have "Wire-On-Time" Plan?	
On Resid. Rates Dec. 31, 1960		Total Sales in 1960		On Resid. Rates Dec. 31, 1960		Total Sales in 1960		On Resid. Rates Dec. 31, 1960		Total Sales in 1960		On Resid. Rates in 1960		Total Sales in 1960		On Resid. Rates Dec. 31, 1960							
Number	Percent Acceptance	By Utility	By Others	Number	Percent Acceptance	By Utility	By Others	Number	Percent Acceptance	No. of Central Systems	Compressor-Type Room Units	Number	Percent Acceptance	By Utility	By Others	Number	Percent Acceptance	Types Being Actively Promoted	No. of Consumers Now Being Served	Sales to Public	Sales to Employees	Yes	No
62,400	55.0	None	*200	2,270	2.0		4,387	51,000	45.0	50	600	3,960	3.5	None	5	45	0.1	All	638	No	Yes	n	
9,160	15.0	None	125	N.A.	N.A.	None	1,309	13,535	22.0	N.A.	1,161	12,759	21.0	None	N.A.	2	N.A.	None	19	No	Yes		X
22,440	11.2		545				4,541	45,081	22.5		3,842	33,861	16.9			27		All	377	No	No	ah	
N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	110	17,700	N.A.	N.A.	N.A.	30,699	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	All	N.A.	Yes	Yes	m	
56,500	18.0	None	500	3,100	1.0	6	3,820	81,500	26.0	900	4,630	46,900	15.0	None	None	12		All	218	rNo	Yes	n	
N.A.	49.8		N.A.	N.A.	N.A.		N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.		36	263	0.1	All	8,473	Yes	Yes		X
40,425	20.9	11	1,064	2,675	1.4	28	2,737	39,500	20.4	500	2,900	22,550	11.6		8	51		All	1,871	Yes	Yes		X
		aq	am			aq	am			aq	am			aq	am	30		All	1,904	No	No		X
N.A.	N.A.		193	N.A.	N.A.	6	1,107	N.A.	N.A.	None	2,150	N.A.	N.A.			N.A.	Negl.	a	89	Yes	Yes		X
88,365	20.0	7	*250	88,365		96	*2,300	88,365	26.0		*2,384							a	79	Yes	Yes	j,m	
3,653	29.5	24	200			148	1,600	47,058	38.0	10	1,703	15,360	12.0	None	5	6		a	390	Yes	Yes		X
	12.4	43			3.0	87			24.4				21.8		None	None	None	None	8	Yes	Yes		X
N.A.	N.A.			N.A.	N.A.		7,112	N.A.	N.A.	1,238								a	28	No	Yes		X
8,600	13.0	9	*200	2,650	4	54	*1,300	12,500	19.0		441	11,000	16.0		2			All	149	Yes	Yes	m	
*750		None	*20	*100		None	*500			*100	*300		0.3	None	None			All	4	No	cNo		X
31,648	21.2	7	701	3,712	2.5	24	3,324	41,888	28.6	614	4,764	*77,749	56.2	1	7	62	0.4	All	y695	No	Yes		X
9,792	24.0		314	816	2.0		1,310	12,648	31.0	228	1,304	22,848	56.0		1	3	Negl.	All	25	No	Yes		X
13,991	17.5		80	245			1,200	15,400	19.3	10	800	5,146	6.4		10	42		a	427	ay	ay		X
h26,913	12.5	z	z	z	z		8,101	h49,141	22.8	144	3,949	b,h24,284	11.2		32	h49	0.2	All	371	No	†No		X
23,500	13.5	None	385	2,950	1.7	None	2,470	29,000	16.7	600	5,290	31,700	18.2	None	None	1		All	102	No	No		X
11,603	13.8	None	N.A.			None	1,222	27,535	33.0	N.A.	N.A.	N.A.	N.A.	None	90	257	0.3	All	v187	wYes	Yes		X
32,227	14.7	None	500	6,796	3.1	None	9,000	93,830	42.8	N.A.	2,000	113,342	51.7	None	39	173	0.1	All	117	No	Yes		X
6,700	4.2		912	2,900	1.9		4,870	28,900	18.4	N.A.	25,571	50,700	32.3		75	258	Negl.	All	N.A.	auYes	auYes		
175,967	4.8		845	175,967	1.1		8,254	175,967	22.9	1,131	11,158	351,934	39.1		108	175,967	Negl.	All	45				
			500				1,700			N.A.	N.A.							All	163	No	No		X
41,500	8.6	59	1,541			415	5,285	67,650	14.0		14,000	b99,700	20.7		7	14		a	489	Yes	Yes	m	
4,500	7.0	1	200	950	1.5	4	600	12,875	20.0	200	810	11,950	18.0		1	7		All	134	No	Yes		X
18,393	12.5	1,056	4,775	28,692	19.5	550	2,250	36,785	25.0		1,385	11,771	8.0		5	25		All	307	Yes	Yes		X
43,350	9.8	100	1,000	10,000		46	2,500	42,000	9.5		7,700	66,000	15.0					All	50	Yes	Yes	m	
917																		None	3	Yes	Yes		X
1,250	7.7	11	2	116	1.0	24	30	537	3.2	6	64	786	4.8	None	None	None	None	None	6	Yes	Yes		X
am	am	am	am	am	am	am	am	am	am	am	am	am	am	am	am	am	am	a	13	No	No		X
73,000	9.7	100	500	3,600	0.5	153	1,300	23,500	3.1	N.A.	5,209	26,000	3.5			3		a	412	Yes	Yes	m	
16,574	13.4							20,934	16.9						9	12		a	516	No	Yes		X

NOTES

ad. Co-operate with small loan departments to encourage their making such loans
ae. West Virginia—82.5% of 241,956 customers
Virginia—34.2% of 192,068 customers
af. Included with automatic washers
ag. Sell ranges, water heaters, dryers, blankets, bulbs to customers and employees
ah. Finance plan available to employees only
aj. Since we do not promote or recommend the use of our service for resistance type space heating, we do not maintain a record of electric space heating consumers
ak. Electric washers only
am. No records maintained
an. Numbers too small to be of value
ao. Major appliances
ap. Do not merchandise
aq. No information available except for electric ranges and water heaters
ar. Basically baseboard, ceiling, wall panel and heat pumps
as. We are active in the sale and installation of commercial electric water heating
at. In conjunction with specific appliance promotions
au. Housewares only
av. Unknown
aw. Because of our climatic conditions, there is virtually no need for any type of heating; air conditioning, however, is actively promoted
ax. Public sales limited to school exchange appliances
ay. Sell only school loan equipment to employees and public through dealers
az. Available from dealers at special discount
† Special offers to employees through dealers
‡ Limited basis covering installation of new electrical appliances only
a† Included in central air conditioning systems
a‡ Classified as heating solely or principally by electricity—over 90% live in small rented apartments of 3 rooms or less
§ Limited
♦ Heat pump only

ELECTRIC LIGHT and POWER'S 32nd

UTILITIES	Domestic Electric Consumer on Resid. Rates, Dec. 31, 1960		Average Annual Kwh per Domestic Consumer		If Combined Gas/Electric Utility, Number of Domestic Gas Consumers 12/31/60	Est. % of Domestic Electric Consumers Having Piped Gas Available 12/31/60	ELECTRIC RANGES				ELECTRIC WATER HEATERS				ELECTRIC
							Total Sales in 1960		On Resid. Rates Dec. 31, 1960		Total Sales in 1960		On Resid. Rates Dec. 31, 1960		Total Sales in 1960	
	Number	Increase Over 12/31/59	12/31/60	Increase Over 12/31/59			By Utility	By Others	Number	Percent Acceptance	By Utility	By Others	Number	Percent Acceptance	By Utility	By Others
MICHIGAN																
Board of Water & Light, City of Lansing	41,723	507	4,524	238	None	95.0	5	1,671	38,473	92.2	None	588	13,410	32.1	1	1,624
Consumers Power Co.	776,310	13,962	4,162	66	498,597	47.0	3,693	46,455	391,260	50.4	786	44,599	268,603	34.6	1,420	33,929
Detroit Edison Co., The	1,167,548	13,222	3,514	102	None	87.0	1,234	24,127	493,900	42.3	6,601	10,623	154,100	13.2	967	11,073
MINNESOTA																
Minnesota Power & Light Co.	69,839	490	4,327	202		80.0	625	1,990	39,110	56.0	760	1,040	27,936	40.0	265	1,535
Northern States Power Co. (Minn.) & Subsid.	637,641	23,720	3,588	125	152,467	70.0	3,355	24,600	205,000	34.0	1,914	8,100	126,000	21.0	1,160	16,800
Otter Tail Power Co.	73,957	928	3,706	129	245					52.1				43.4		
MISSISSIPPI																
Mississippi Power & Light Co.	156,910	2,180	3,132	372		80.0		*3,500	*31,400	20.0		*800	*5,800	3.7		*g1,000
Mississippi Power Co.	92,974	1,568	3,498	361	N.A.	86.5	595	730	20,650	22.2	195	300	5,590	6.0	111	390
MISSOURI																
Empire Dist. Electric Co.	58,086	580	2,338	5	None	70.0		1,648	10,681	18.2		767	6,551	11.2		1,337
Kansas City Power & Light Co.	233,048	6,445	3,242	135	None	98.0	76	5,644	*57,250	27.0	4	297	8,006	3.6	35	3,292
Missouri Edison Co., The	14,549	699	2,803	139	1,526	23.0		50	2,437	16.7		75	2,328	16.0		95
Missouri Power & Light Co.	56,294	938	2,697	179	21,391	42.4		909	17,086	30.3		842	10,355	18.4		778
St. Joseph Light & Power Co.	39,129	408	3,151	135	2,128	67.0	180	400	10,782	28.0	49	125	4,199	11.0	98	250
Union Electric Co.	540,466	4,346	3,689	119	10,108	80.0		10,761	160,761	29.7		2,881	57,559	10.6		5,195
MONTANA																
Montana Power Co., The	130,025	2,735	4,055	74	56,091	80.0	None	5,700	N.A.	N.A.		1,348	N.A.	N.A.	None	5,100
NEBRASKA																
Omaha Public Power District	111,342	3,858	4,212	145		90.0		5,164	46,187	41.5		707	16,642	14.9		3,316
NEVADA																
Sierra Pacific Power Co.	39,351	1,985	5,552	294	8,428	21.4	ab	ab	ab		ab	ab	ab		ab	ab
Southern Nevada Power Co.	30,140	1,863	11,467	1,236		45.0		3,799				2,767				442
NEW HAMPSHIRE																
Public Service Co. of New Hampshire & Subsid.	151,066	3,051	3,013	114		23.0	845	*2,226	*78,100	*51.7	1,347	*1,089	28,659	19.0	349	*1,345
NEW JERSEY																
Atlantic City Electric Co.	178,792	5,803	3,684	101		85.0	510	3,350	106,778	60.0	265	3,048	71,835	40.0	None	g3,232
Jersey Central Power & Light Co.	242,626	9,851	3,469	81		80.0		4,608	64,281	26.5		2,951	41,272	17.0		6,048
New Jersey Power & Light Co.	99,807	2,838	3,805	172	None	20.0		3,591	48,795	48.8		2,386	27,246	27.2		2,223
Public Service Electric & Gas Co.	1,235,096	13,832	2,452	38	1,037,586	95.0	N.A.	N.A.	126,700	10.3	N.A.	N.A.	33,200	2.7	N.A.	N.A.
NEW MEXICO																
Public Service Co. of New Mexico	89,243	2,959	2,866	158	None	95.0		5,485	am	am		317	am	am		1,765
NEW YORK																
Central Hudson Gas & Electric Corp.	116,268	2,482	3,169	54	38,146	32.8		1,992		34.0		808		20.0		N.A.
Consolidated Edison Co. of New York, Inc.	2,371,200	8,300	1,780	x7	1,169,200	*100.0	None	8,520	N.A.	N.A.	None	1,325	N.A.	N.A.	None	13,870
Long Island Lighting Co.	531,436	19,482	3,370	67	310,290	80.0	None	12,484	*155,000	*29.0	None	1,500	*27,000	*5.0	None	12,545
New York State Electric & Gas Corp.	413,400	7,500	3,561	95	92,000	52.0		7,800	143,000	34.0		3,050	72,000	17.0		7,700
Niagara Mohawk Power Corp.	966,477	5,014	3,551	101	330,187	55.0		19,600		38.0		5,560		14.0		19,500
Rochester Gas & Electric Corp.	180,502	2,481	3,397	92	147,107	91.0	416	*4,684	65,000	36.0	118	*782	25,300	14.0	392	*4,108

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* Estimated
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h. Data as of June 30, 1960
j. Employees only
k. Includes 40% heat pump customers
m. Utility financed
n. Bank financed.
o. Sell only ranges and water heaters to public, all appliances to employees
p. Appliance tabulations include residential and farm
q. Appliance saturation based on 417,350 dwellings which includes 86,434 separately metered apartments and 95,165 master metered apartments
r. Sells water heaters only
s. No rural and farm
t. Central systems only
u. Ranges and water heaters to builders
v. 8 kw or over
w. Ranges, water heaters, dishwashers
x. Decrease
y. 359 complete homes and 336 partial homes (permanently installed)
z. Included under dryers
aa. Only when appliance is purchased from our company
ab. Our company does not do any direct selling nor do we keep records
ac. The company merchandizes electric ranges, water heaters and dryers in rural non-natural gas territory only

ANNUAL MAJOR APPLIANCE SURVEY

DRYERS		ELEC. WASHER-DRYERS				ELEC. HOME FREEZERS				ELEC. RESID. AIR COND.				ELEC. HEAT-PUMP SYSTEMS				ELECTRIC SPACE-HEATING		Utility's 1961 Electric Merchandising Policy		Have "Wire-On-Time" Plan?	
On Resid. Rates Dec. 31, 1960		Total Sales in 1960		On Resid. Rates Dec. 31, 1960		Total Sales in 1960		On Resid. Rates Dec. 31, 1960		Total Sales in 1960		On Resid. Rates in 1960		Total Sales in 1960		On Resid. Rates Dec. 31, 1960							
Number	Percent Acceptance	By Utility	By Others	Number	Percent Acceptance	By Utility	By Others	Number	Percent Acceptance	No. of Central Systems	Compressor-Type Room Units	Number	Percent Acceptance	By Utility	By Others	Number	Percent Acceptance	Types Being Actively Promoted	No. of Consumers Now Being Served	Sales to Public	Sales to Employees	Yes	No
17,850	42.8	4		N.A.	N.A.	2	737	13,856	33.2	N.A.	N.A	N.A.	N.A.	None	N.A.	N.A	N.A.	None	150	No	Yes		X
89,419	24.4	N.A.	N.A.	N.A.	N.A.	742	20,526	199,511	25.7		3,046	17,466	2.2					a	1,595	Yes	Yes		X
31,200	19.8		1,381	15,200	1.3	149	11,875	197,300	16.9		13,250	100,400	8.6		17	17		All	1,856	Yes	Yes		j
15,365	22.0	z	z	z	z	100	1,500	13,965	20.0	av	av	av	av	av	av	av	av	a	65	Yes	Yes	m	
32,000	22.0	None	4,000			435	13,600	126,000	21.0	N.A.	15,016	54,000	9.0		N.A.	N.A.	N.A.	All	338	Yes	Yes		X
	19.2								24.2									All	81	No	Yes		
g9,400	6.0	z	z	z	z		*2,500	*39,200	25.0			*39,200	25.0		*200	*499	0.3	All	k1,230	No	Yes		X
6,510	7.0	5	190	z	z	140	2,700	20,370	21.9	None	3,154	35,030	35.9	None	76	193	Negl.	All	86	Yes	Yes		X
N.A.	N.A.		316	N.A.	N.A.		2,591	N.A.	N.A.	N.A.	2,084	N.A.	N.A.	2	None	57	N.A.	All	113	axYes	Yes	m	
17,000	8.0	3	*700	*3,000	1.0	58	*3,250	*31,000	15.0	*2,500	*10,030	*88,000	39.0		4	19		a	110	No	Yes		X
671	4.6		10	19			80	1,922	13.2	20	300	1,760	12.0		None	5		All	28	No	No		X
6,042	10.7	N.A.	N.A.	N.A.	N.A.		853	11,490	20.4	92	954	9,216	16.4		5	21	0.1	All	161	No	Yes		X
4,545	12.0		100	550	1.0	51	150	5,408	14.0	40	295	6,772	16.9	None	2	19		All	89	Yes	Yes	m	
85,195	15.7		613	7,013	1.3		5,620	107,880	19.9	N.A.	16,981	221,391	41.0		32	177		All	1,746	No	Yes	X	
N.A.	N.A.	None	782	N.A.	N.A	None	2,900	N.A.	N.A.	None	628	N.A.	N.A	None	None	N.A.	N.A.	None	*500	No	No	m,n	
4,198	21.7	am	am	am	am		1,598	20,400	18.3		2,884	32,577	29.2			6		a	146	No	Yes	m	
ab		ab	ab	ab		ab	ab	ab		ab	ab	ab		ab	ah	ab		None		No	No		X
			184				529			951					3,006			All	N.A.	No	No		X
17,970	*11.9	45	*187	N.A.	N.A.	29	*685	13,600	*9.0	N.A.	*911	*2,570	*1.7	None	1	1		a	76	Yes	Yes		X
34,712	19.0		z	z	z	None	2,719		N.A.	27	3,107		N.A.	None	1	116		All	2,200	No	uYes		X
N.A.			781	N.A.			4,185	N.A.		6,177		N.A.				3	Negl.	a	260	No	No		X
N.A.			195	N.A.			1,110	N.A.		894		N.A.				1	Negl.	a	212	No	No		X
99,600	8.1	N.A.	N.A.	12,300	1.0	N.A.	N.A.	134,000	10.9	N.A.	N.A.	361,500	29.4	N.A.	N.A.	15		All	92	No	Yes		X
am	am		360	am	am		4,675	am	am	7		am	am		12	am	am	All		No	Yes		X
	10.0		N.A.		1.0		N.A.		15.0									a	17	No	No		X
N.A.	N.A.	None	2,330	N.A.	N.A.	None	9,960	N.A.	N.A.	2,990	99,000	N.A.	N.A.	None	None	N.A.	N.A.	None	112	No	No		X
N.A.	N.A.	None	778			None	8,469			2,700	17,000	*10,700	2.0	None				None	*1,080	No	No		X
81,000	20.0						6,000		19.0		1,200	b9,200	2.0					None	236	No	Yes		X
	18.7		3,700		2.0		N.A.		N.A.	N.A.	10,400		7.0		1			All	1,725	No	No	n	
48,700	27.0	65	*635	am	am	257	*2,443	39,700	22.0	N.A.	1,800	15,200	8.0	None	None		None	a	380	Yes	Yes		X

NOTES

ad. Co-operate with small loan departments to encourage their making such loans
ae. West Virginia—82.5% of 241,956 customers
Virginia—34.2% of 192,068 customers
af. Included with automatic washers
ag. Sell ranges, water heaters, dryers, blankets, bulbs to customers and employees
ah. Finance plan available to employees only
aj. Since we do not promote or recommend the use of our service for resistance type space heating, we do not maintain a record of electric space heating consumers
ak. Electric washers only
am. No records maintained
an. Numbers too small to be of value
ao. Major appliances
ap. Do not merchandise
aq. No information available except for electric ranges and water heaters
ar. Basically baseboard, ceiling, wall panel and heat pumps
as. We are active in the sale and installation of commercial electric water heating
at. In conjunction with specific appliance promotions
au. Housewares only
av. Unknown
aw. Because of our climatic conditions, there is virtually no need for any type of heating; air conditioning, however, is actively promoted
ax. Public sales limited to school exchange appliances
ay. Sell only school loan equipment to employees and public through dealers
az. Available from dealers at special discount
† Special offers to employees through dealers
‡ Limited basis covering installation of new electrical appliances only
a† Included in central air conditioning systems
a‡ Classified as heating solely or principally by electricity—over 90% live in small rented apartments of 3 rooms or less
§ Limited
♦ Heat pump only

ELECTRIC LIGHT and POWER'S 32nd

UTILITIES	Domestic Electric Consumer on Resid. Rates, Dec. 31, 1960		Average Annual Kwh per Domestic Consumer		If Combined Gas/Electric Utility, Number of Domestic Gas Consumers 12/31/60	Est. % of Domestic Electric Consumers Having Piped Gas Available 12/31/60	ELECTRIC RANGES				ELECTRIC WATER HEATERS				ELECTRIC
							Total Sales in 1960		On Resid. Rates Dec. 31, 1960		Total Sales in 1960		On Resid. Rates Dec. 31, 1960		Total Sales in 1960	
	Number	Increase Over 12/31/59	12/31/60	Increase Over 12/31/59			By Utility	By Others	Number	Percent Acceptance	By Utility	By Others	Number	Percent Acceptance	By Utility	By Others
NORTH CAROLINA																
Carolina Power & Light Co.	364,685	7,601	5,345	281		60.0		14,996	279,876	77.0		8,529	240,134	66.0		1,701
Duke Power Co.	628,875	14,901	5,382	341		20.0	4,048	26,452	453,600	72.0	3,924	30,076	382,021	61.0	448	3,552
OHIO																
Cincinnati Gas & Electric Co., The	377,893	7,375	3,469	150	280,522	74.0		11,118	80,739	21.4		5,338	56,773	15.0		8,337
Cleveland Electric Illuminating Co., The	507,396	9,814	3,462	86		95.0		11,333	145,000	29.0		2,500	50,000	10.0		10,654
Columbus & Southern Ohio Electric Co.	244,557	3,730	3,267	106	None	85.0	None	8,932	78,992	32.3	None	1,063	22,256	9.0	None	6,992
Dayton Power & Light Co., The	293,882	5,895	3,749	129	183,310	69.9	734	*5,613	109,638	45.7	784	2,011	52,641	21.9	526	6,209
Ohio Edison Co.	534,421	11,353	3,863	89	N.A.	78.0	2,806	12,494	249,900	46.8	457	2,880	78,650	14.7	1,311	12,119
Ohio Power Co.	407,740	6,553	4,266	181	None	90.0	None	13,000	248,600	61.0	None	4,000	110,700	27.0	None	13,000
Toledo Edison Co., The	174,383	2,036	3,984	85	3,318	70.0	None	5,251	93,073	53.0	None	459	32,642	19.0	None	4,115
OKLAHOMA																
Oklahoma Gas & Electric Co.	299,497	7,894	2,855	248	None	97.0	None	6,714	56,215	18.8	None	947	5,031	1.7	None	4,502
Public Service Co. of Oklahoma	221,235	3,796	2,967	256		*90.0		6,382	57,542	26.0		1,589	4,526	2.0		3,917
OREGON																
California Oregon Power Co., The	75,722	1,373	9,783	677				3,679	59,608	78.7		2,910	57,465	75.9		2,869
Pacific Power & Light Co.	251,763	532	8,198	577		*60.0		17,914	211,480	84.0		11,021	193,857	77.0		18,249
Portland General Electric Co.	228,358	6,381	9,719	533	None	*85.0		11,250	200,040	87.0		12,000	190,650	83.0		13,250
PENNSYLVANIA																
Duquesne Light Co.	434,198	7,956	2,986	53		99.0		8,283	112,891	26.0		281	10,240	2.4		8,336
Metropolitan Edison Co.	225,418	4,229	3,846	114		66.0	None	6,792	128,979	67.8	None	4,073	63,825	28.6	None	6,268
Pennsylvania Electric Co.	356,596	3,438	3,321	110	None	66.0	None	9,495	163,926	46.2	None	7,130	76,252	21.5	None	11,217
Pennsylvania Power & Light Co.	634,297	6,901	3,362	124		56.0	190	14,425	307,000	48.5	60	7,056	155,000	24.5	125	14,137
Pennsylvania Power Co.	79,237	971	4,063	111		80.0	274	2,233	35,080	44.3	104	600	15,590	19.7	126	2,668
Philadelphia Electric Co.	913,203	13,682	3,373	53	215,231	93.0	884	*15,765	287,100	31.4	1,051	*4,589	114,624	12.6	858	14,104
United Gas Imp. Co., Luzerne Elec. Div.	42,926	119	2,179	67												
West Penn Power Co.	347,020	5,065	3,893	141		75.0		9,031	151,589	43.7		5,556	78,818	22.7		14,515
RHODE ISLAND																
Newport Electric Co.	15,741	251	3,701	158			125	375	10,874		None	225	4,532		10	175
SOUTH CAROLINA																
South Carolina Electric & Gas Co.	163,827	4,457	5,284	341	43,722	27.0		10,500	67,500	41.0		12,000	53,000	32.0		4,500
SOUTH DAKOTA																
Black Hills Power & Light Co.	34,487	2,555	3,536	112		81.0	241	*750	13,200	52.0	358	*75	5,534	22.0	92	*950
Northwestern Public Service Co.	32,425	327	3,857	140	12,000	40.0	309	*600	15,000	51.0	173	*600	12,000	40.0	120	*800
TENNESSEE																
Electric Power Board of Chattanooga	75,572	762	14,091	1,451				4,739		91.0		5,005		83.0		3,020
Kingsport Utilities, Inc.	19,420	355	8,925	853		30.0	None	830	17,500	90.0	None	454	15,543	80.0	None	827
Memphis Light, Gas & Water Div.	162,470	4,375	4,382	334	151,294	93.1	None	3,200	27,500	18.0	None	800	10,000	7.0	None	2,000
Nashville Electric Service	114,643	2,778	12,689	1,067		75.0		6,567	98,435	86.0		5,257	92,251	81.0		3,210
TEXAS																
Central Power & Light Co.	205,417	4,704	3,415	234		95.0		7,621	46,150	22.6		2,455	6,577	3.2		5,241
City Public Service Board, San Antonio	165,494	4,043	3,229	242	146,145	9.1		2,129	42,116	26.0		171	3,240	2.0		964
Dallas Power & Light Co.			4,822	448		100.0		8,358	66,863	29.2						4,171
El Paso Electric Co.	s84,765	2,302	3,787	213		90.0	142	2,471	32,475	38.3	208	2,053	23,280	27.5	36	1,262
Gulf States Utilities Co.	257,097	4,151	4,077	389	49,838	90.0	676	10,008	83,685	32.5	501	2,374	22,098	8.6	195	6,069
Houston Lighting & Power Co.	415,460	7,234	5,078	369		90.0		10,041		13.0		1,073		1.0		5,105
Southwestern Public Service Co.	162,375	5,920	3,045	231	None	96.0	None	6,683	N.A.		None	1,291	4,000	2.6	None	8,028
Texas Electric Service Co.	278,972	5,290	3,819	387		95.0		7,769	55,830	20.0		200	1,560	0.6		6,101
Texas Power & Light Co.	323,146	8,140	3,208	385		*85.0	None	8,916	49,611	15.4	None	763	1,375	0.4	None	N.A.
West Texas Utilities Co.	92,830	1,624	3,173	265			843	316			287	51			446	677

NOTE: Omissions in tabulated data indicate corresponding omissions in data furnished by respondent utility. Appliance sales figures by other than utility are actual or estimated.

FOOT

Negl. Negligible
* Estimated
N.A. Not available
a. Resistance type only
b. Includes only compressor-type room units
c. Ranges only
d. 102,802 kw connected
e. Lost a few due to urban renewal and turnpike
f. Includes only utility sales
g. Includes combination washer-dryers
h. Data as of June 30, 1960
j. Employees only
k. Includes 40% heat pump customers
m. Utility financed
n. Bank financed
o. Sell only ranges and water heaters to public, all appliances to employees
p. Appliance tabulations include residential and farm
q. Appliance saturation based on 417,350 dwellings which includes 86,434 separately metered apartments and 95,165 master metered apartments
r. Sells water heaters only
s. No rural and farm
t. Central systems only
u. Ranges and water heaters to builders
v. 8 kw or over
w. Ranges, water heaters, dishwashers
x. Decrease
y. 359 complete homes and 336 partial homes (permanently installed)
z. Included under dryers
aa. Only when appliance is purchased from our company
ab. Our company does not do any direct selling nor do we keep records
ac. The company merchandizes electric ranges, water heaters and dryers in rural non-natural gas territory only

ANNUAL MAJOR APPLIANCE SURVEY

DRYERS		ELEC. WASHER-DRYERS				ELEC. HOME FREEZERS				ELEC. RESID. AIR COND.				ELEC. HEAT-PUMP SYSTEMS				ELECTRIC SPACE-HEATING		Utility's 1961 Electric Merchandising Policy		Have "Wire-On-Time" Plan?	
On Resid. Rates Dec. 31, 1960		Total Sales in 1960		On Resid. Rates Dec. 31, 1960		Total Sales in 1960		On Resid. Rates Dec. 31, 1960		Total Sales in 1960		On Resid. Rates in 1960		Total Sales in 1960		On Resid. Rates Dec. 31, 1960							
Number	Percent Acceptance	By Utility	By Others	Number	Percent Acceptance	By Utility	By Others	Number	Percent Acceptance	No. of Central Systems	Compressor-Type Room Units	Number	Percent Acceptance	By Utility	By Others	Number	Percent Acceptance	Types Being Actively Promoted	No. of Consumers Now Being Served	Sales to Public	Sales to Employees	Yes	No
18,801	5.0						6,371	128,681	35.0	4,831		t67,877	19.0		345	844	0.2	All	1,245	No	Yes		X
31,500	5.0		1,200	3,000		1,101	13,899	126,000	20.0	600	10,000	48,000	6.0		485	1,121	0.2	All	2,885	Yes	Yes	m	
62,978	16.7		966	N.A.	N.A.		6,255	82,151	21.7	N.A.	9,552	b54,843	14.5		6	12		All	264	No	No	m	
125,000	25.0		1,473	5,000	1.0		6,650	90,000	18.0	550	7,860	55,000	11.0		None	80	1.0	All	2,033	No	No	n	
80,948	33.1	None	954	N.A.	N.A.	None	2,748	35,461	14.5	N.A.	5,231	b30,999	12.7	None	1	18	8.0	All	255	No	No		X
90,411	37.7	None	648	N.A.	N.A.	None	4,487	67,058	27.9	N.A.	1,364	25,823	10.8	None	1	4	Negl.	a	264	Yes	acYes		ad
126,600	23.7	50	1,460	5,300	1.0	524	8,506	75,900	14.2	N.A.	3,800	36,700	6.9	None	3	12		All	564	Yes	Yes		X
157,000	38.0	None	1,100	N.A.	N.A.	None	7,500	N.A.	N.A.	N.A.	3,000	N.A.	N.A.	None	43	281		All	6,760	No	No		X
63,201	36.0	None	556	3,744	2.0	None	2,011	36,102	20.5	N.A.	1,800	7,874	4.5	N.A.	N.A.	N.A.	N.A.	None	390	No	No		X
30,257	10.1	z	z	z	z	None	6,149	50,296	16.8	2,084	10,500	101,657	25.5	None	162	320	0.1	All	79	No	No		X
21,948	9.9		z	z	z		4,159	29,054	13.1	*1,000	*8,000	*99,750	45.1		86	269	0.1	All	588	No	No	m	
			489				2,221				625				13	95		All	17,562	No	No	m	
105,740	42.0		2,760	N.A.	N.A.		12,275	100,705	40.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	None	*25,000	No	No		X
117,425	51.0		5,250				10,000	80,450	35.0	N.A.	N.A.	N.A.	N.A.		42	120		All	*32,000	No	No	m	
99,866	23.0						4,742	59,742	13.8	959	5,067	51,026	11.8					All	157	No	§		X
51,031	22.9	None	N.A.	N.A.	N.A.	None	3,278	N.A.	N.A.	N.A.	2,443	N.A.	N.A.	None	None	N.A.	N.A.	a	966	ap	ap		X
110,944	31.3	None	N.A.	N.A.	N.A.	None	6,782	N.A.	N.A.	N.A.	1,628	N.A.	N.A.	None	None	N.A.	N.A.	a	813	No	No		X
113,000	17.8	3	1,215	12,700	2.0	15	7,234	118,000	18.6	82	5,980	b89,000	b14.0		10		N.A.	a	609	No	No	m	
26,990	34.1	am	am	am	am	50	1,386	14,900	18.8	am	417	4,780	15.1	None	am	3	0.1	All	62	Yes	Yes	n	
152,219	16.7	N.A.	N.A.	N.A.	N.A.	578	*8,889	107,980	11.8	2,780	51,495	*335,500	33.5			3		All	16	Yes	Yes	m,n	
																		a	6	No	No		
116,915	33.7		N.A.	N.A.	N.A.		6,213	78,000	22.5	47	2,222	21,710	6.3		4	29	Negl.	All	1,006	No	No		X
		2	15			6	48													Yes	Yes		X
13,000	8.0		2,000	8,150	5.0		7,500	41,120	24.0	225	10,000	54,900	32.5		115	258		All	589	No	Yes		X
*4,600	18.0	54	*75	*750	*3.0	34	[illegible]	4,000	*16.0	*10	*504	*25	*5.0		1	1		a	26	Yes	Yes		
5,000	18.0	20	*250	1,000	3.0	61	*250	6,500	22.0	15	325	2,100	8.1	None	None	None	None	None	32	Yes	Yes	m	
	27.0						1,934		21.2	37	6,577		78.8		216	1,109	1.4	All	36,876	No	No		X
5,850	30.0		z	z	z	None	200	9,780	50.0	10	300	1,100	5.5	None	26	105	0.5	All	3,339	No	No		X
28,000	19.0	None	300	z	z	None	3,900	40,000	26.0	1,100	10,500	103,000	65.0	None	250	500	0.3	All	1,800	No	No		X
22,773	21.0		z	z	z		2,833	21,317	20.0	1,000	10,552	*53,214			192	*850		All	44,637	No	No		X
20,953	10.2		842	3,383	1.7		6,507	46,421	22.7	1,167	12,887	93,061	45.4		260	730	0.4	All	171	No	Yes		X
14,579	9.0		316	8,099	5.0		3,280	42,116	26.0	N.A.	9,255	68,033	42.0		N.A.	N.A.	N.A.	None	400	No	Yes		X
g31,214	g13.6		1,208				4,444	42,968	18.8	1,453	15,676	288,532				245		All	2	No	Yes		X
7,090	8.4	17	1,312	7,020	8.3	15	2,412	22,952	27.1	30	656	4,645	5.5	None	6	28	0.1	All	23	Yes	Yes		X
34,464	13.4					98	6,634	71,276	27.7		13,243	b69,416	27.0		800	2,007	0.8	All	250	oYes	Yes		X
	11.0		1,118		z		11,495		24.0	7,856	60,270		49.0		936		0.5	All	60	No	Yes		X
N.A.		None	z	N.A.		None	9,108	N.A.		None	1,472	N.A.		None	40	280	0.2	All	103	No	Yes		X
36,143	13.0		N.A.				11,716	86,904	31.2	3,500	11,933	104,068	31.1		36	136	0.1	All		No	No		X
N.A.	N.A.	None	8,118	N.A.	9.4	None	12,651	N.A.	18.5	N.A.	N.A.	N.A.	39.9	None	227	474	0.1	All	12	No	Yes		X
		ak573				356				31	286			24				a		Yes	Yes		

NOTES

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Virginia—34.2% of 192,068 customers
af. Included with automatic washers
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ah. Finance plan available to employees only
aj. Since we do not promote or recommend the use of our service for resistance type space heating, we do not maintain a record of electric space heating consumers
ak. Electric washers only
am. No records maintained
an. Numbers too small to be of value
ao. Major appliances
ap. Do not merchandise
aq. No information available except for electric ranges and water heaters
ar. Basically baseboard, ceiling, wall panel and heat pumps
as. We are active in the sale and installation of commercial electric water heating
at. In conjunction with specific appliance promotions
au. Housewares only
av. Unknown
aw. Because of our climatic conditions, there is virtually no need for any type of heating; air conditioning, however, is actively promoted
ax. Public sales limited to school exchange appliances
ay. Sell only school loan equipment to employees and public through dealers
az. Available from dealers at special discount
† Special offers to employees through dealers
‡ Limited basis covering installation of new electrical appliances only
a† Included in central air conditioning systems
a‡ Classified as heating solely or principally by electricity—over 90% live in small rented apartments of 3 rooms or less
§ Limited
♦ Heat pump only

ELECTRIC LIGHT and POWER'S 32nd

UTILITIES	Domestic Electric Consumer on Resid. Rates, Dec. 31, 1960		Average Annual Kwh per Domestic Consumer		If Combined Gas/Electric Utility, Number of Domestic Gas Consumers 12/31/60	Est. % of Domestic Electric Consumers Having Piped Gas Available 12/31/60	ELECTRIC RANGES				ELECTRIC WATER HEATERS				ELECTRIC
							Total Sales in 1960		On Resid. Rates Dec. 31, 1960		Total Sales in 1960		On Resid. Rates Dec. 31, 1960		Total Sales in 1960	
	Number	Increase Over 12/31/59	12/31/60	Increase Over 12/31/59			By Utility	By Others	Number	Percent Acceptance	By Utility	By Others	Number	Percent Acceptance	By Utility	By Others
UTAH																
Provo City Corp.—Dept. of Utilities	7,611	55	294	23		95.0		588	313	60.0		124	53	50.0		655
Utah Power & Light Co.	208,799	5,022	4,474	179		80.0		13,026		64.0		4,257		28.0		7,831
VERMONT																
Central Vermont Public Service Corp.	60,130	1,036	3,468	245	2,317	N.A.	1,100	*2,500	N.A.	N.A.	100	*1,000	N.A.	N.A.	275	500
VIRGINIA																
Appalachian Power Co.	434,024	2,351	3,726	260		ae	None	15,283	287,253	66.5	None	7,957	117,093	27.1	None	10,078
Virginia Electric & Power Co.	673,776	17,443	3,984	146	93,882	60.0	ap	N.A.	296,000	44.0	ap	N.A.	204,300	32.0	ap	N.A.
WASHINGTON																
City of Tacoma Dept. of Public Utilities	56,433	440	9,964	420		16.0		8,100	51,691	91.6		3,200	47,342	33.9		4,500
Puget Sound Power & Light Co.	203,381	6,553	8,982	373		30.0	None	9,000	177,000	87.0	None	8,500	171,000	84.0	None	8,000
Seattle City Light	208,386	514	9,133	473	13,000			am	196,243			am	159,047			am
Washington Water Power Co., The	128,459	804	9,055	412	16,113	40.0	None	5,573	116,900	91.0	None	4,029	115,650	90.0	None	3,904
WEST VIRGINIA																
Monongahela Power Co.	195,561	1,800	2,666	169		78.0	993	5,486	53,337	27.3	607	1,702	15,707	8.0	1,041	5,806
Wheeling Electric Co.	38,027	x36	3,312	[illegible]		95.0	553	756	*15,000	40.0	130	344	4,487	11.8	36	1,195
WISCONSIN																
Lake Superior District Power Co.	23,330	187	4,706	244	None	None	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Wisconsin Electric Power Co.	p460,699	10,849	4,219	155		93.6	343	11,700	188,000	40.8	197	3,616	116,190	25.2	119	9,700
Wisconsin Power & Light Co.	173,051	3,445	4,318	65	33,927	24.1	624	3,500	51,538	38.0	488	1,000	42,044	31.0	605	3,000
Wisconsin Public Service Corp.	147,847	2,906	3,704	117	66,756	*56.0	971	N.A.			628	*710	42,950	29.1	649	N.A.
TOTALS FOR THE UNITED STATES	40,610,677	857,349	4,083		9,280,356		1,095,820		12,449,163		513,706		7,069,741		702,256	
CANADA																
British Columbia Electric Co., Ltd.	251,100	4,800	4,842	73	96,350	84.0		8,900	147,000	58.4		6,000	114,000	45.4		5,250
British Columbia Electric Co., Ltd.	47,778	1,072	4,658	213	6,638	20.0		1,782	27,542	57.6		539	6,074	12.7		690
Quebec Hydro Electric Commission	500,860	27,457	4,282	196	N.A.	45.0	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Shawinigan Water & Power Co., The	238,903	8,025	3,674	240	N.A.	3.0		9,692	84,514	35.0		7,947	52,747	22.0		3,692
Southern Canada Power Co., Ltd.	83,099	2,225	4,615	215	Negl.	Negl.	1,212	3,528			1,378				481	
TOTALS FOR CANADA	1,121,740	43,579	4,414		102,988		25,114		259,056		15,864		172,821		10,113	

NOTE: Omissions in tabulated data indicate corresponding omissions in data furnished by respondent utility. Appliance sales figures by other than utility are actual or estimated.

FOOT

Negl. Negligible
* Estimated
N.A. Not available
a. Resistance type only
b. Includes only compressor-type room units
c. Ranges only
d. 102,802 kw connected
e. Lost a few due to urban renewal and turnpike
f. Includes only utility sales
g. Includes combination washer-dryers
h. Data as of June 30, 1960
j. Employees only
k. Includes 40% heat pump customers
m. Utility financed
n. Bank financed
o. Sell only ranges and water heaters to public, all appliances to employees
p. Appliance tabulations include residential and farm
q. Appliance saturation based on 417,350 dwellings which includes 86,434 separately metered apartments and 95,165 master metered apartments
r. Sells water heaters only
s. No rural and farm
t. Central systems only
u. Ranges and water heaters to builders
v. 8 kw or over
w. Ranges, water heaters, dishwashers
x. Decrease
y. 359 complete homes and 336 partial homes (permanently installed)
z. Included under dryers
aa. Only when appliance is purchased from our company
ab. Our company does not do any direct selling nor do we keep records
ac. The company merchandizes electric ranges, water heaters and dryers in rural non-natural gas territory only

ANNUAL MAJOR APPLIANCE SURVEY

DRYERS		ELEC. WASHER-DRYERS				ELEC. HOME FREEZERS				ELEC. RESID. AIR COND.				ELEC. HEAT-PUMP SYSTEMS				ELECTRIC SPACE-HEATING		Utility's 1961 Electric Merchandising Policy		Have "Wire-On-Time" Plan?	
On Resid. Rates Dec. 31, 1960		Total Sales in 1960		On Resid. Rates Dec. 31, 1960		Total Sales in 1960		On Resid. Rates Dec. 31, 1960		Total Sales in 1960		On Resid. Rates in 1960		Total Sales in 1960		On Resid. Rates Dec. 31, 1960		Types Being Actively Promoted	No. of Consumers Now Being Served	Sales to Public	Sales to Employees	Yes	No
Number	Percent Acceptance	By Utility	By Others	Number	Percent Acceptance	By Utility	By Others	Number	Percent Acceptance	No. of Central Systems	Compressor-Type Room Units	Number	Percent Acceptance	By Utility	By Others	Number	Percent Acceptance						
353	30.0 28.0		229 1,504	133	25.0 4.0		539 7,644	254	20.0 25.0	316	131 779	70	20.0 2.7		None 16			a All	None 740	No No	No No		X X
N.A.	N.A.	400	50	N.A.	N.A.	207	500	N.A.	N.A.		200	N.A.	N.A.			N.A.	N.A.	All	40	Yes	Yes	‡	
90,711 80,700	21.0 12.0	None ap	N.A. N.A.	N.A.	N.A.	None ap	N.A. N.A.	128,000	19.0	N.A. N.A.	N.A. N.A.	80,700	12.0	None ap	168 184	[illegible] [illegible]	0.1 0.1	All arAll	4,969 2,955	No No	No No		X X
29,570 92,000 09,000 65,500	52.4 45.0 51.0	None None	1,200 N.A. 765	7,675 N.A. N.A.	13.6 N.A. z	None None	1,800 4,500 3,453	20,316 67,000 47,500	36.0 33.0 37.0	N.A. 229	N.A. 990	N.A. 10,280	N.A. 8.0	N.A. None	24 N.A. N.A.	N.A. N.A.	N.A. N.A.	All All All	6,089 16,389 20,132 12,887	No No asNo No	Yes Yes Yes Yes	m	X X X
40,045 *9,000	20.5 25.0	None None	N.A. 200	N.A.	N.A.	376 None	2,800 600	37,000	19.0	N.A. None	526 300			None None	2 8	[illegible] [illegible]		All All	862 609	Yes Yes	Yes Yes	m	X
N.A. 11,400 37,297	N.A. 24.2 27.5	N.A. 3 121 28	N.A. 1,050 350 N.A.	N.A. N.A. 4,204	N.A. N.A. 3.1	N.A. 65 366 272	N.A. 5,200 2,000 N.A.	N.A. 100,100 31,329	N.A. 21.7 23.1	N.A. N.A. None N.A.	N.A. 3,807 837 59	N.A. e33,650 5,832	N.A. 7.3 4.3	N.A. None None	N.A. 1 None N.A.	N.A. [illegible] None	N.A. None	a a a [illegible]	10 300 N.A.	Yes Yes Yes Yes	Yes Yes Yes Yes	m m	X
514,340		103,985		522,884		622,550		5,534,379		108,840	815,071	5,040,120		19,371		221,895			355,884				
32,000	13.0		300	4,000	1.5		3,100	30,000	11.9	am	am	am	am	am	am	am	am	None	3,300	No	No		X
4,109	8.6	am	am	am	am		655	6,422	13.4									None	805	No	No		X
N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	None	a‡4,395	No	No		X
14,378	6.0		4,342	20,873	9.0		2,152	13,823	6.0									None	655	az		m	
		132				319				5	65							None		Yes	Yes	m	
50,487		4,774		24,873		6,226		50,245		5	65								9,155				

NOTES

ad. Co-operate with small loan departments to encourage their making such loans
ae. West Virginia—82.5% of 241,956 customers
Virginia—34.2% of 192,068 customers
af. Included with automatic washers
ag. Sell ranges, water heaters, dryers, blankets, bulbs to customers and employees
ah. Finance plan available to employees only
aj. Since we do not promote or recommend the use of our service for resistance type space heating, we do not maintain a record of electric space heating consumers
ak. Electric washers only
am. No records maintained
an. Numbers too small to be of value
ao. Major appliances
ap. Do not merchandise
aq. No information available except for electric ranges and water heaters
ar. Basically baseboard, ceiling, wall panel and heat pumps
as. We are active in the sale and installation of commercial electric water heating
at. In conjunction with specific appliance promotions
au. Housewares only
av. Unknown
aw. Because of our climatic conditions, there is virtually no need for any type of heating; air conditioning, however, is actively promoted
ax. Public sales limited to school exchange appliances
ay. Sell only school loan equipment to employees and public through dealers
az. Available from dealers at special discount
† Special offers to employees through dealers
‡ Limited basis covering installation of new electrical appliances only
a† Included in central air conditioning systems
a‡ Classified as heating solely or principally by electricity—over 90% live in small rented apartments of 3 rooms or less
§ Limited
♦ Heat pump only

(Continued from page 23)

of the commercial electric cooking activities of the respondent utilities. A total of 95 utilities reported that they promote this important load aggressively. At the end of 1960, a total of 4,672,194 commercial customers were being served by 138 utilities; 105 utilities reported that 197,437 of their commercial customers are food serving customers; and 98 utilities reported that 70,913 food serving customers use major electric cooking equipment.

Appliance Servicing

Queried as to their appliance servicing programs for 1961, the respondent utilities reported as follows: 84 service electric appliances; 27 have a dealer service training program; 35 have a vocational appliance service training program in their junior colleges and trade schools; 121 consider electric appliance service facilities adequate in their territories.

Finance Appliance Purchases

In the case of the non-merchandising utility respondents, the question was raised as whether they finance appliance purchases for employees and/or dealers. Of those responding to this question, nearly 56% finance appliance purchases for employees. Only 8% do so for dealers.

Special Rate Schedules

Findings from this year's study further disclosed that 118 respondent utilities have special rates for electric water heating; 74 for electric heating; and only 20 for commercial cooking.

Service Entrance Policies

A check on the residential service entrance policies of the respondent utilities revealed that only 45 supply, at no cost, facilities extending through the meter; only five through the service entrance main breaker; only two through the circuit breaker for individual appliance circuits; and only three to the customer's major appliance, including furnishing the cable.

TABLE III

What's Happening In Electric Space Heating

U. S. GEOGRAPHIC DIVISION	NO. OF RESPONDENT UTILITIES NOW PROMOTING ELECTRIC SPACE HEATING	NO. OF ELECTRIC SPACE HEATING CUSTOMERS NOW BEING SERVED BY RESPONDENT UTILITIES
Pacific	13 (1-p)	118,152 (2-N.A.)
Mountain	7	3,066 (2-N.A.)
West North Central	11	3,429
West South Central	15	2,568 (2-N.A.)
East North Central	12	24,575 (2-N.A.)
East South Central	9	91,921
New England	5	508
Middle Atlantic	7	5,258
South Atlantic	13	20,480
	Total	270,257

N.A.—Number of respondent utilities who failed to list customers served.
p—Number of respondent utilities promoting heat pump type heating only.

Only 53% Push Home Lighting

Findings from this year's study reveal that only 53% of the respondent utilities promote residential lighting aggressively. A slightly lower percentage report that they have full-time lighting people on their staffs.

As regards departmental affiliations of the full-time lighting people, the total by number of utilities are: General Sales—22; Residential Sales—12; Commercial Sales—11; Home Service—8; Residential & Commercial Sales—7; Commercial & Industrial Sales—2; Home Lighting & Wiring—2; Marketing—2; miscellaneous other departments—13.

Less than 14% of the respondent utilities merchandise CLM lamps and less than 17% merchandise other portable lamps of good design.

TABLE IV

What's Happening In Kilowatthour Usage By Domestic Electric Consumers

YEAR	AVERAGE ANNUAL KWH CONSUMPTION BY CUSTOMERS OF RESPONDENT U. S. UTILITIES
1960	4083 kwh
1959	3846 kwh
1958	3709 kwh
1957	3481 kwh
1956	3257 kwh

GEOGRAPHIC DIVISION BREAKDOWN FOR THE YEAR 1960—	
Pacific	7409 kwh
Mountain	4666 kwh
West North Central	3500 kwh
West South Central	3168 kwh
East North Central	3927 kwh
East South Central	5193 kwh
New England	3269 kwh
Middle Atlantic	3290 kwh
South Atlantic	4142 kwh
Hawaii	4002 kwh

ELECTRIC HEAT CUTS COSTS AT PUSH-BUTTON ASPHALT PLANT

Push-button operation featuring electric heat permits one man to operate entire asphalt plant including weighing-out of finished product.

By H. M. SMYTHERS, Commercial Sales Engineer, Appalachian Power Co.

THE S. R. Draper Paving Co., Roanoke, Va., has made a push-button operation of its asphalt plant through the use of, among other things, electric heat. One man operates the entire plant, including the weighing-out of the finished product.

Conveniences and labor-saving devices are typified by an automatic dump trip. Radio-dispatched vehicles are used for increasing the volume and affording greater customer convenience.

The plant also features a unique stone-handling arrangement. An elevated dump ramp makes it possible to dump the stone, when received from the quarry located on the adjacent property, into the storage bin. This arrangement makes it necessary to handle the stone only once.

Advantages

The following advantages are listed by Mr. Draper for his electric operations: lower first costs, lower insurance rates, decreased maintenance and depreciation, better quality control, safer, decreased labor costs, and greater convenience.

The installation of 83.5 hp of motor load, including a 1-ton heat pump in the office, makes the plant virtually an all-electric operation.

The 83.5-hp motor load consists of a 1-hp heat pump, 5-hp elevator, 7.5-hp screener, 10-hp elevator, 10-hp dryer drum, 20-hp blower, and 30 hp on the pug (mixing) mill.

Electric Heat

The 48.7 kw of electric heat are utilized as follows: 30 kw in the 10,000-gal asphalt tank, 10 kw in the 10,000-gal oil tank, 5.7 kw on the pug mill, 1.2 kw on the unloading pump and pipes, 1.2 kw on the pipe between the asphalt tank and mill, and .6 kw on the pump and pipe on the mill.

The asphalt tank heaters consist of four 7,500-w tubular heaters 16 ft long. In order to avoid exceeding the char coint of 450 F, it is necessary to have a watt density not in excess of 4 w per sq in. This limitation was met by inserting an 8-w density heater into a 2-in. black iron pipe, which was mounted inside the 17-ft tank.

Over-Sized Equipment

The asphalt is received from the supplier at the same temperature at which it is used—300 F. The normal heating requirements would be equal to the radiation loss, provided there are no close-downs. Unlike the work schedule of most asphalt plants, the Draper Paving Co. operates the year around, and normally there would be no close-downs. The heating equipment is over-sized, however, to insure temperature recovering in case of an extended period of severe weather. Another reason for over-sizing was to permit greater than normal heating at night or other times non-coincident with the electric peak, thus saving operating costs.

The oil is received from the supplier and is used at 150 F. The siz-

(Continued on page 54)

Close-up of the four 7.5-kw heating elements used in the 10,000-gal asphalt tank. The elements, mounted in 2-in. pipes, extend almost the full length of 17-ft tank. Four thermostats are used for temperature control and increased safety. Insulation is 6-in. fiberglass. The 10,000-gal oil tank in background is heated by two 5-kw heaters.

Electric heat control panel has fused disconnect switches, contactors, relay, thermostats and time clock. S. R. Draper, owner-operator, at right, discusses equipment with Miles Smythers, commercial sales engineer, Appalachian Power Co. The nearly all-electric installation includes 83.5 hp of motor load, 48.7 kw of electric heat.

WHAT THE COMPANY EXPECTS FROM THE POWER SALES ENGINEER

The greatest service a Power Sales Engineer can render is to inspire his customers to modernize in such a manner that they will stay competitive and prosperous in the company's service area and grow and expand in it.

By S. L. CHAPIN, Manager Industrial and Commercial Sales, Public Service Electric & Gas Co.

IF WE are going to talk about what a company expects of Power Sales Engineers we first have to define the objectives of a Power Sales Engineering Department. What does the company want to accomplish; what are the objectives? There are three very important ones:

1. Create and maintain a healthy climate for industrial development. This requires that the Company have competitive and reasonable rates; reliable and dependable service readily available to meet the requirements of its service area. The Company must create and maintain a cooperative, welcoming community atmosphere for industry—an atmosphere which welcomes industry throughout its service area.

2. Create and maintain a friendly, trustworthy rapport between the utility and the industrial fraternity. In plain language this is referred to as good customer relations. Between the utility and the industrial customer this relationship is refined far above the ordinary standard.

3. Create and maintain in its service area a prosperous, healthy, competitive industry which manufactures better, faster, cheaper and uses more electric service each year. An industry which will grow and stay competitive in the Company's service area.

If a utility has established an adequate program to accomplish these objectives and has recruited and trained a high grade force of capable sales engineers to implement this program, what does the Company expect of this Power Sales Engineer?

Personal Solicitation

In setting up such a department the Company has made the firm decision that its entire program of obtaining new business, maintaining good customer relations, and all the other objectives shall be implemented through the medium of personal solicitation of its customers by this group of men. In most cases 90 percent of the budget for this activity will be earmarked for the personal salary and expenses of these Power Sales Engineers.

Under such a condition the success or failure of such a program depends entirely upon the steady, conscientious, reliable day-to-day effort of each and every one of these men. I like to think that the operation is the same as the sales and service organization functions of any other company. No spectaculars are required. There is no magic that can be brought to bear—no supermen or geniuses are needed. The whole program is dedicated to the proposition that a group of men will call on the Company's customers and sell, service, and assist them—often and effectively.

Typical Day

Let's describe a typical day in the light of what a company expects a Power Sales Engineer to do and how the company hopes it will be done. In the first place he should arrive at the office at a reasonable hour. On arriving, he should spend from one-half to one hour doing office work, gathering customer data, issuing orders, making reports, and if he has not already done so the day before, planning and making his appointments for the day's calls and—don't forget to make the appointments. By 9:30 am at the latest, he should hit the road to sell, service, and assist his accounts.

The very first objective in making these calls is to see that the customer is satisfied with present and past shipments of the company's product. Any dissatisfaction or complaint should be resolved quickly and completely.

Mr. Right Man

He should get to talk to Mr. Right

Man. By talking to Mr. Right Man or by observation and plant inspection he should get to know these things:

1. How well is the plant lighted?
2. How well is it mechanized?
3. How is the plant heated?
4. What fuel is used for process heating?
5. What is the general activity level of the workers?
6. Is "prepare" and "put away" time at a minimum?

Editor's note: This article has been adapted from a talk presented by the author at the Interstate Power Club.

7. Is too much inventory stored in process?
8. Are production lines straight, compact, efficient?

From this knowledge he should ferret out, point out and sell the profit advantages of additional use of utility service. He should further assist the customer in any other way possible, whether use of utility service is involved or not, for the customer's continued success and prosperity is vital to his company.

After making a reasonable number of calls he should come back to his office and record pertinent and significant information about the customer's operation on customer data cards. He should record the customer's use of service for analysis and proper rate application. He should issue any necessary orders for service and do any other required paper work.

Last but not least he should do what all sales engineers hate to do. In the manner prescribed, he should report his sales and service activities and the results thereof to his management.

Intimate Knowledge

Of course there is the general over-all knowledge that is expected of the customer's operation which comes from and only after making many such calls on a customer. This is the intimate knowledge of the customer, at times so desirable, and the company expects to be able to obtain it from the Power Sales Engineer. Who else is there? I often feel that you sell yourselves short in not fully realizing this important prestige function. The only communication link between the company and its customer is you!

What is this intimate knowledge that is so desirable and necessary about the customer?

1. What type of company?
2. What type of management?
3. What kind of raw materials? Where do they get them? What is the value added?
4. What is the market for the product and how is it marketed?
5. What are their production methods and processes?
6. Are they financially reliable and trustworthy?
7. What are their decision making processes?
8. Are they community oriented?

These are many of the intimate questions at times so vital to the company. Why? Because the company at times is required to act in consort with some of these customers. The company at times may be required to spend large sums of money to supply additional service to the customer.

Manager's Apprehensions

In what area do you fall down in carrying out these objectives? What are the apprehensions of a manager of a department who has to justify year after year a million dollar

budget based on the result of your efforts? Furthermore he is faced with the proposition that all the eggs are in one basket: your personal successful solicitation of the customer's business. This is the medium selected. The company succeeds or fails on your operation. In the light of such a situation three areas loom all important to the company's management:

1. How much time are you spending face to face with your customers?

2. Are you talking to and assisting Mr. Right Man? By Mr. Right Man I mean the decision making man. One thing that haunts sales managers is what I call the "Hello Joe" call. JOE is a nice, jolly fellow whom you find down in the boiler room or in the maintenance shop. He will talk to you all day or as long as you wish about any subject but he hasn't made a decision for the company in 20 years and he never will!

3. Are you selling, servicing and assisting Mr. Right Man effectively?

In general, I think that you do a good job in servicing and assisting your customers, but my concern as a sales manager is: are you selling the customer benefits of your company's product effectively? Here the answer is "no" and it is not all your fault. The big hoax in utility selling today and in the past is that we have been too equipment oriented. We have failed to relate product features to customer benefits. This is not just my opinion. Research consultants have confirmed this several times. We have an equipment barrier. We love to describe equipment in glowing terms and all the while we are describing it the customer is asking the vital question, "What will it do for me?"

Customer Benefits

Product features must be converted to customer benefits in today's market place. If I asked any one of you to cite to me, as a makebelieve customer, five customer benefits of any one of your products—such as lighting, your best known product—how would you do? After the second customer benefit you would be anything but eloquent and not very convincing, yet this is your vocation. Maybe this is not your fault. It is perhaps due to lack of training and lack of proper supervision. Regardless of the fault you can correct it. All it takes is personal discipline and rehearsing.

This defection of not relating product features to customer benefits is a great shame because our product is loaded with the benefits that the customer most needs and wants today: profit, convenience, trouble-free operation, less maintenance, fewer headaches.

Today's space age environment of rocketry, data processing, computing, automatic programming and control with its instrumentation requires a high comfort quotient:

1. It can't stand low lighting levels.
2. It can't stand dirt, soot, smoke.
3. It can't stand changes of temperature and humidity.
4. It can't stand noise or vibration.

It is a white glove, white coat environment and utility service is the only energy compatible with this environment.

Talk Customer Benefits

With our product a man sees better, breathes better, eats better,

(Continued on page 65)

HOME SERVICE TAKES ON NEW ROLES

Today's utility Home Service Representatives no longer play their role of "cook" to the hilt. Changing needs of companies and customers have added new roles and require new skills and techniques.

By MARGUERITE G. SURLES
Home Service Director
Carolina Power & Light Co.

ANY ACTOR worth his salt can play more than one role. If he can't he soon fades out of the picture! And the more varied roles he can assume—the more he is in demand. The criterion is: does he give a good performance? The box office and the Oscar awards tell the story!

Versatility is certainly one tag you could pin on every one of our Home Service Representatives! Where else could you find a group whose every member is dually saleswoman, teacher, writer, demonstrator, homemaking and sales consultant, public speaker, cook, seamstress, interior decorator, public relations agent? All of these endeavors and many more are aimed at "good box office" for our Company!

Teacher-Writer

They don't rest on their laurels either! They have played their role of "cook" to the hilt and helped reach our 76% range saturation of which we're so proud. They play the "teacher" part well, too, training future homemakers in home economics and 4-H Club groups in the many benefits of electric living. Their many newspaper columns and articles for the dealer magazines attest to their "writer" role. Civic groups before whom they appear throughout our system tell us these Home Service Representatives are good public speakers and represent our Company well.

Ask our appliance dealers if these ladies can fill the "saleswoman" role! These dealers have sales totals to prove it! Homemakers by the thousands ask for and get help from our Home Service Representatives on practically every homemaking problem in the book—from how to ruffle a curtain on the sewing machine to what to do with jelly that won't jell!

To our Company, as to our customers, the house is the all-important element now, the all-electric house—the Medallion Home—is getting the "star billing" and good performers that they are, our Home Service Representatives are filling the good, substantial "supporting role." They are selling, advertising, demonstrating and counseling with our customers and sales allies every day on each item that goes to make up the Medallion Home.

New Roles

From properly planned kitchens, laundries and lighting to selection of good lighting fixtures and well-adapted appliances; from the merits

Checking wiring installation for a customer's new home is part of the job for Peggie Limer, CP&L's Rockingham, N. C., home service representative, with electrical contractor.

Pointing out the advantages of electric baseboard heating and individual room control with two future customers is Eugenia White, CP&L Henderson, N. C., home service representative.

of the various types of electric heating and cooling to the value of a good insulation installation—these are the new roles Home Service is playing. These new roles mean learning new skills, acquiring new techniques and adapting knowledge and experience to meet the changing needs of our Company and its customers.

What do these new roles mean in the way of training? A look at the programs from recent Home Service Conferences gives the answer! "How to Read a Blueprint," "Budgeting for New Homes," "Viewpoint of the Building Contractor," "Increasing our Effectiveness in Selling Electric House Heating," "Our Competitors are Selling House Heating, Too," "The Home Service Representatives' Part in Advertising." This type of training is a far cry from the "pots and pans" story our representatives heard on their first training program!

Preparation

All this and much more is necessary, though, to prepare our Home Service Representatives to play these new roles. Imagine, if you can, all the things you'd have to know if you were going to advise a family planning to build a new home! For instance: Which type of electric heating will best suit their needs and their house plan? What type of insulation will do the best job? How much will storm windows reduce their heat loss? How about furniture placement? (Remember those heat sources!) What wall colors can be used to give the reflection factor necessary for good lighting in that room with the northeast exposure? Are there enough circuits and convenience outlets in the house plan to provide real total electric living for this family? What type lighting fixtures should be recommended for the foyer, the kitchen and the den?

There's More

That's a brief picture of the new roles Home Service is playing but there's more! The cast has been expanded, too! It now includes electrical, building and heating contractors and lighting equipment suppliers. There are insulation dealers, real estate agents, newspaper and radio advertising people who also have an interest in promoting Medallion Homes and all their saleable features. Our Home Service Representatives must have at least a nodding acquaintance with the problems and aspirations of all these new performers, too! There's a whole new area of temperaments, abilities and modes of operation to explore and adjust to so that the overall production will result in more and more satisfied customers living in Medallion Homes!

Home Builders' Forums

And to really stimulate the interest of our customers in these new roles the Home Service Representatives will be organizing "Home Builders' Forums" this year. Invited to these meetings will be all customers who are planning to build or remodel in the near future to hear experts discuss home financing, landscaping, building costs, electrical needs and other pertinent subjects.

All this is only to say—Home Service fills the role that fills the need! New role—old role—whatever parts need to be played to fill the bill—Home Service adapts and improvises, recostumes and rehearses and makes the entrance on cue!

Selecting lighting fixtures in display room with new home owners and electrical contractor is Mrs. Jane Struthers, second from right, CP&L Sanford home service representative.

ARE FOOT-CANDLE LEVELS TOO HIGH?

Here is definite proof based on experience that the new IES recommended higher foot-candle levels for office, industrial and institutional installations are completely justified from the standpoint of improved production and many other benefits.

By E. A. LINSDAY, Supervisor of Industrial Lighting Applications, Large Lamp Dept., General Electric Co.

THE EVIDENCE is that leaders in business and industry find that prevailing standards are inadequate for efficient operations. Leaders are keenly aware of difficulties which beset profit-making. They are not content to accept a precarious "getting-by" today with the hope that obstacles will disappear tomorrow. Unit costs tend to rise while competition presses hard on the profit margin.

Lighting programs, equal to or better than the standards of advanced practice recommendations of the Illuminating Engineering Society, give a lift to all other factors for plant and office efficiency. Just about every operation in the work world begins with an impulse from the visual sense. When seeing conditions are superior, disposition and capacity of employees to perform more effectively is marked. For every dollar of labor cost, production results are dependably higher with better lighting.

We back up our position with a great variety of case histories. Because of the reluctance of management to offer testimonials, we cannot pass along many of the specific details of improved operations which come to us in off-the-record reports. We are constantly running into situations where benefits accruing from better lighting are regarded as trade secrets not to be shared with competitors.

In about 20 years we have observed lighting standards through a most remarkable series of advance. The period covers the great transformation of practice following the introduction of fluorescent lamps.

Lighting for industry had moved from about two to 20 ft-c in the years between 1910 and 1940. That was a ten-times advance. Considering illuminants available, and equipments and techniques that existed for applications, that period accomplished great things. It was well known, however, to researchers in the field of light and sight that we had just scratched the surface of potential development.

In the 20 years from 1940, the whole picture has been transformed. We now have many industrial installations of 400 and 500 ft-c providing essential economies for important industries.

Instances of practice above 100 ft-c are legion. As executives and other industrial personnel move to new jobs in different companies, those with experience in better lighted plants are quick to prove themselves with recommendations for better lighting programs. It seems to be a sure-fire way for a new executive to demonstrate he has the know-how vital to the support of profit-making.

There is no more important service that utilities can offer their industrial customers than up-to-date counsel on lighting. It is a load builder par excellence because it is one that keeps increasing. Experience with superior lighting teaches management that it is basic to every improvement aimed at higher efficiency and lower unit costs. Technology in every line is creating new problems in every industry every day. New plant investment for better equipment presupposes seeing conditions that make it valid.

Maintaining 250 ft-c in the grid system grinding area of the Erickson Tool Co., Solon, Ohio, increased worker efficiency 10 percent and paid for itself in three months.

A level of 300 ft-c in the meter assembly area of Hickok Electrical Instrument Co., Cleveland, Ohio, has increased production 50 percent. Product quality has been improved. A similar installation has been recommended for the Company's new plant at Greenwood, Miss.

180-200 foot-candles at the General Iron & Metal Corp., Chicago, has increased volume and reduced complaints.

Maintaining a level of 100 ft-c in the eviscerating room of Eastern Live Poultry Co., Willimantic, Conn., has improved overall plant efficiency, reduced waste and employee turnover. The new lighting not only meets the inspector's needs, but enables employees to do a better job with less fatigue.

A lighting level of 1000 ft-c at the Electro-Data Division of Burroughs Corp., Los Angeles, has increased subassembly efficiency of data processing equipment by 35 percent. Rework of cold solder joints and wrong terminal connections has been greatly reduced. Eye strain and physical fatigue are virtually eliminated.

200 foot-candles at the L. S. T. Typography Co., Chicago, has provided faster and more accurate typesetting. Linotype machines are so oriented in the room that operators view fixtures from the sides and enjoy maximum seeing comfort. The need for supplementary lighting, historically employed by linotype operators, has been reduced because of the higher level of general lighting. The lighting also provides much of the heat required.

10,000 ft-c in the immediate welding area enables this welder to see through the dense welding glass, enabling him to strike the arc cleanly and exactly where the weld should begin.

160 maintained foot-candles at the General Bookbinding Co., East Cleveland, has increased the flexibility of production space and improved employee morale.

The Company takes advantage of every opportunity to "plug" its Medallion builders. In St. Petersburg at a Parade of Homes show, the pictures of builders who were showing Medallion Homes were arranged around a 9-ft Medallion emblem in the Florida Power Corp. booth in the display tent. The pictures were also used in the Company's two-page newspaper advertisement. Sixteen of the 17 homes on display were Medallions.

A special contest for sales employees is adding momentum to the Medallion program and gives Florida Power Corp. an opportunity to reward deserving employees. Here, Medallionaire R. E. Lowe, Jr., Clearwater division residential sales supervisor, claims another Medallion.

PEOPLE-TO-PEOPLE-APPROACH SELLS MEDALLION HOMES

Aggressive promotion of the Medallion concept at both national and local level is largely responsible for tremendous electrical upgrading in homes.

By R. N. ROBERTSON, Director, Residential Development, Florida Power Corp.

SINCE FLORIDA Power Corp. started to aggressively promote the Medallion Home in March, 1958, 53,174 (or 85 percent) of the total of 62,627 new homes connected to the Company's lines through May 31, 1961, have been all-electric homes. Although many of these just missed meeting the Medallion standards, the actual certificates now total 6647. Of these, 718 are Gold Medallion Homes.

Since the program originated over 1,000 builders in our service area have constructed one or more Medallion homes. Committed to the program are 162 subdivisions, ranging from ten homes to one with a potential of 7,000 homes.

During 1960, we awarded the Medallion emblem to 3,012 homes. This was an increase of 988 or 49 percent over 1959. In spite of a decline in new housing starts, 1238 Medallion Homes have been certified by the company during the first four months of 1961, to top the same period in 1960 by 4.5 percent. Dollar volume of appliance sales for the year 1960 are 5.2 percent over 1959. Medallion Home promotion has contributed substantially to this record.

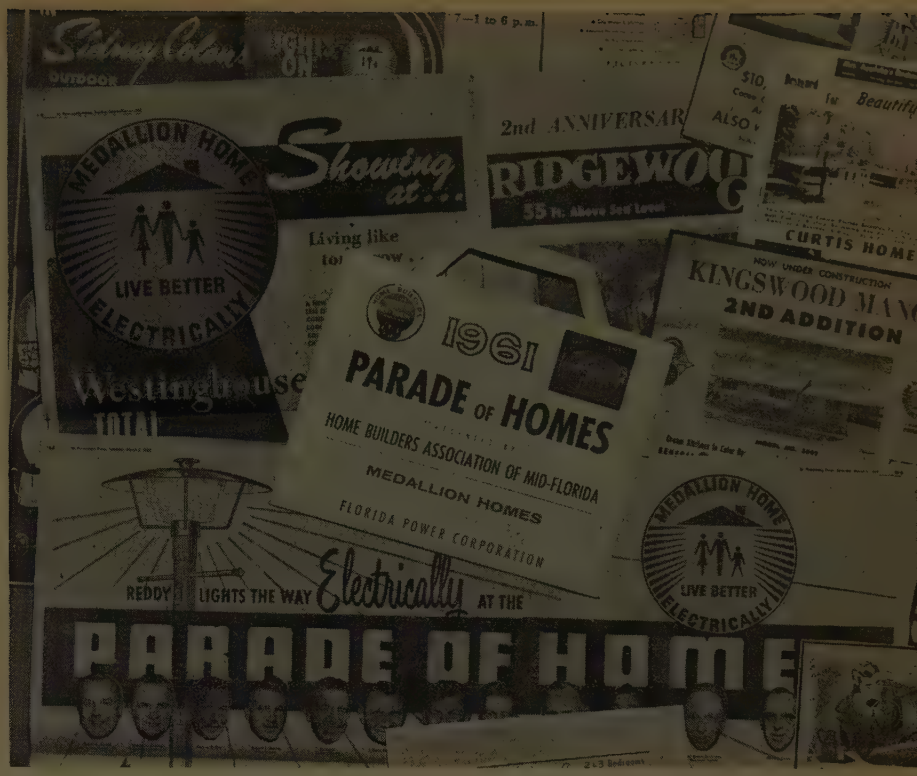
Top Priority Project

Florida Power Corporation has made the Medallion Home program its top priority project. By incorporating all the components of Total Electric living, the Medallion Home has become the Company's most potent weapon to offset gas competition in the new home market.

In promoting the Medallion concept, the Company has found the "people-to-people" approach most effective. Company sales personnel have become "Medallionaires" as during each customer call, during each store and home demonstration, they have told and sold the Medallion Home story. Constant contact with builders, developers, electrical contractors, architects and other allies has established the Medallion emblem as a symbol of the finest in electrical wiring, lighting and appliances.

These "Medallionaires" help

Miss Live Better Electrically introduces Florida Power Corp.'s glamor promotion—the Medallion Home program—during a Company sales meeting. Rated the Company's top priority project, the Medallion program is backed by year-round advertising and promotion to sell flameless, all-electric living.



When cooperative assistance is given by Florida Power Corp. for Medallion Home promotion, the type of promotion and the media to be used are carefully worked out with the builder to make sure he gets the aid he feels will be most helpful.

builders and customers by providing free wiring, laundry, lighting and kitchen planning services. They assist builders with open houses and other Medallion promotions whenever they're needed. Last year, at just two Parades of Homes, for example, more than 70,000 persons and 400 visiting builders from throughout the State were given the Medallion story.

Promotional Program

To supplement personal contacts, Florida Power has conducted an aggressive Medallion promotional program. Special newspaper sections, publicity, billboards, brochures, decals and other handout pieces have all been utilized to focus attention on Total Electric Medallion living.

Capitalizing on the national Medallion programs of the Edison Electric Institute, electrical appliance manufacturers and others, we have coordinated our program with the national promotions and tied in at the local level. The Company maintains a regular schedule of advertisements in 50 daily and weekly newspapers, plus a limited schedule of radio and TV spots. The Medallion emblem is inserted in nearly every advertisement where copy and layout are not specifically devoted to directly selling the Medallion Home concept.

No Wiring Subsidies

The Company offers no wiring subsidies for Medallion Homes. Likewise, we have not established a set promotional figure per home as many utilities do. Instead, in cooperation with manufacturers who have Medallion programs, each development or subdivision is dealt with on an individual basis in regard to cooperative promotional assistance. In each instance, the type of promotion and media to be used are carefully worked out with the builder to make sure he gets the promotional aid he feels will be most helpful.

Cooperative advertising and promotion provided on this basis has been extremely effective and has resulted in much good will among the builders. In many cases, they continue to use the Medallion emblem in their own advertising and promotion long after the initial cooperative promotion is completed, because they feel it helps them sell.

Since the home building market in our service area is highly speculative, it was decided that a Medallion training program for real estate salesmen would be beneficial. Consequently, in a series of dinner meetings, realtors, developers and their sales people have heard the sales features of the Medallion Home discussed and have received operating cost material, brochures and handout pieces designed to help them sell Medallion Homes.

The response to this training program has been enthusiastic, and by explaining the Medallion program and the significance of the Medallion emblem to these key people, the Company has enabled them to better sell Total Electric living to prospective homeowners.

Another important feature of our Medallion program has been a novel Medallion contest for the Company's sales employees and managers. In creating a spirit of competition between the Company's divisions, the contest has generated Medallion sales momentum and given the Company an opportunity to recognize deserving sales people.

A solidly embedded floor warming system being installed in a private house. Electricians are laying out the PVC heating cable on the solid concrete floor using metal discs as guides. Around the edges of the floor can be seen the top of a 1-in. thick slab of thermal insulation.

THERMAL-STORAGE SPACE HEATING GAINS IN SCOTLAND

Attractive rates and active sales promotion has successfully developed off-peak thermal storage space heating.

By JOHN W. MOULE,
Chief Commercial Officer,
South of Scotland Electricity Board, Glasgow

THERMAL STORAGE space heating is the chief component of off-peak load in the South of Scotland. It is becoming increasingly popular as indicated by the figures in the accompanying tables.

The design of suitable off-peak rates should take into account the cost incurred by consumers in providing the necessary thermal storage. An off-peak supply, available for a few hours in the middle of the night, has the advantage of the lowest possible unit charge, but this advantage is more than offset by the cost of providing sufficient thermal storage. Experience in the south of Scotland has proved that it is better to fix off-peak rates with as little restriction in electricity supply as possible, even though the unit charge is thereby somewhat increased.

Thermal Storage Space Heating

Water and concrete are the most commonly used media for storing heat over the periods when the electricity supply is not available. The ordinary hot water central heating system usually has sufficient water heating capacity to cover a two-hour electricity supply interruption and in such cases an ordinary electrode boiler can be installed without special storage facilities. If the water capacity of the system is inadequate, it is quite easy to install a hot water storage tank to operate in conjunction with the electrode boiler.

The thermal storage properties of concrete are used in the off-peak heating of buildings by warmed floors. This is one of the outstanding

space heating developments of recent years. In the case of new buildings, electrical heating cables are installed in the concrete floors thereby turning the floors into large low temperature heating surfaces.

The block storage heater has been developed to meet the need of existing premises. It consists of an electrical heater surrounded by blocks of concrete or fireclay, the heater and blocks being contained in a sheet metal case. The heater is of a size and electrical loading similar to an ordinary domestic convector heater and can therefore be plugged into a 15-amp outlet. It is very heavy—between 200 and 400 lb.

Until recently the block storage heater could not be installed in domestic premises in Great Britain. It was developed for industrial and commercial buildings and as such was sold free of purchase tax. Operating experience in small offices, etc., suggested that it could be used very successfully in the home and representations have been made to the U. K. Treasury to secure its wider application. As a result, some manufacturers have produced a domestic version of the block storage heater and it is expected to be available for sale towards the end of the year. It will attract purchase tax in the same way as ordinary electric heaters.

Floor Warming

The best known modern application of floor warming is the provision of heating coils containing hot water or steam embedded in the concrete floors of buildings. Experience in Great Britain during the war in the heating of air raid shelters brought electrical floor warming to the fore. Since the war, it has been extensively developed, particularly in the south of Scotland and it has undoubtedly taken its place as a proved and accepted form of space heating. Its advantage to the Electricity Supply Authority is that large thermal storage capacity of the concrete floor enables electrical floor warming to be successfully used on off-peak rates. The availability of relatively low priced off-peak rates enables it to be economical for the consumer.

The electrical heating cables can either be drawn into embedded metal housings or solidly embedded in the concrete floors. The former system is the more expensive to install but has the advantage that the heating cables can be readily replaced if a fault should develop.

Installation

The accompanying photos show both a withdrawable and an embedded type of floor warming in course of installation in a transformer workshop in the south of Scotland. The total area heated is 41,900 sq ft, and a load of 486 kw was installed. As the floor had to be capable of carrying very heavy loads, it was necessary to lay a monolithic floor with the result that the main load bearing floor, the floor heating system, and the top screed all had to be laid during the same day. The floor was laid in panels 15 by 17 ft.

As shown in the photo on the withdrawable floor heating system, semi-circular aluminum or steel housings are laid in parallel lines across the main floor with the flat side uppermost. At the far end the housings are connected by bent steel conduit to sheet metal troughs, mounted on the wall about one ft above floor level. The trough gives permanent access to the housings to permit the heating cables to be installed and to carry the electrical wiring and connections to the heating cables. At the near end the housings will be joined by sleeves of the same shape to the housings of the next panel. Expanded metal is laid to cover the housings and is fixed to the top and flat side of the housings by suitable fasteners. Finally the expanded metal is covered by the top screed of concrete. Vibrators are often used to eliminate air pockets.

With the embedded floor warming system, flanged discs about 1½ in. diameter are nailed along the two opposite sides of a panel of the main concrete floor while it is still soft. A PVC covered heating cable is laid out on the panel using the flanged discs as guides. The diameter of the discs, and hence the spacing of the cable, is calculated to give the necessary input into the floor. Finally, the concrete screed is laid over the heating cable.

Floor Heating Controls

It is generally accepted that, to match the heat loss of the human body, warmth is best imparted by low temperature radiation with air movements reduced to a minimum.

A withdrawable electrical floor warming installation in a transformer workshop uses semi-circular aluminum or steel housings with flat side uppermost laid in parallel lines across the floor. Housings are covered with expanded metal which is clamped to the housing and acts both as a heat diffuser and as a re-inforcement for the concrete.

Purely convection heating is unsatisfactory in that the air temperature must be kept at a value higher than would be necessary if radiant heat were present. Convection heating also has the disadvantage that it leads to unnecessary air movement and that temperatures are higher at ceiling level than at floor level. Floor heating however, provides maximum warmth where it is most required, i.e., at a person's feet, and owing to this and its low temperature radiant nature, it is the most satisfactory method of heating from the comfort standpoint. Furthermore, it is the most efficient in that air temperatures and hence the building heat losses, are kept at a minimum.

An important further advantage of floor heating is that, when installed, it is completely out of sight and takes up no valuable floor space.

Block storage heater made by The General Electric Co., Ltd., London. Note the blocks of fireclay surrounding the heating panels.

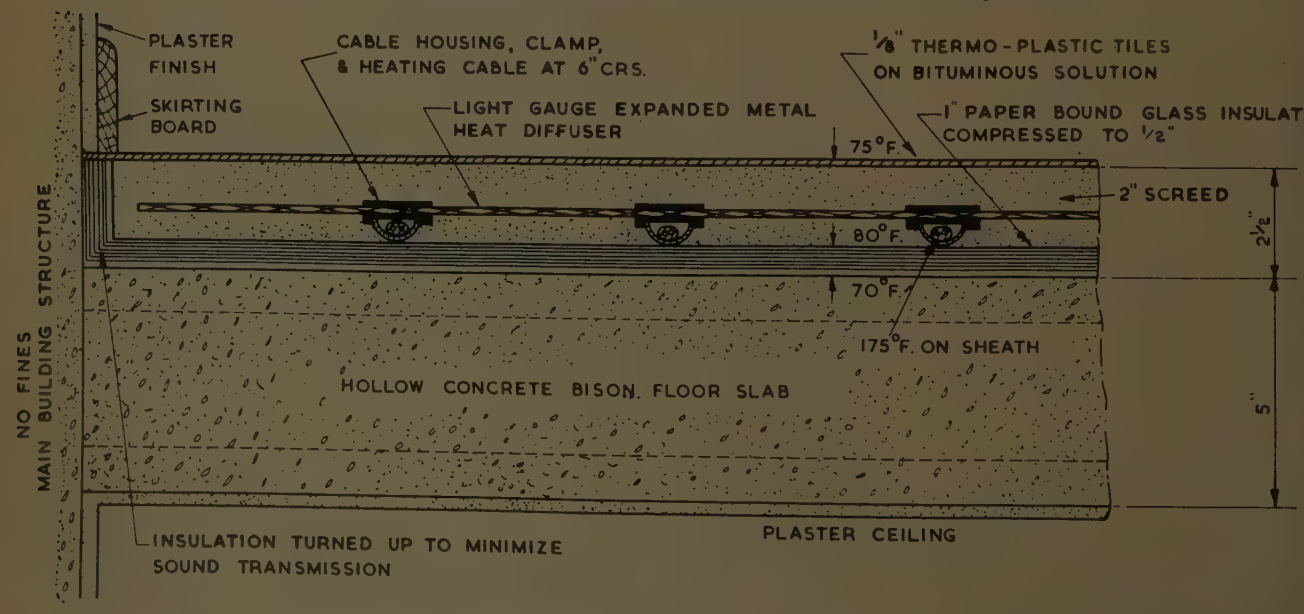
Block Storage Heaters

Several manufacturers in Great Britain are now making block storage heaters. One example shown in the accompanying photo is made by The General Electric Co., Ltd., London. The heater on the right hand side of the photograph is only partly assembled in order to illustrate the general construction. The outer case is of sheet metal lined with a thermal insulating material. Two electrical heating panels are placed in the center of the case and the heaters are surrounded by blocks of fireclay. One of the fireclay blocks is shown standing by the side of the heater. This method of construction enables the heater to be readily assembled on the site. The opening in the foot of the heater case gives access to a terminal block which is used to connect the heater to the supply wires.

The completed heater is shown on the left hand side of the photo. The case is finished in bronze giving a pleasing appearance which will fit in with almost any style of decoration. It is not bulky and occupies only a small floor area, a typical heater size being 12 in. deep by 26 in. wide and 30 in. high. The electrical load is 1½ kw and other models are available with loads of 1 kw, 2¼ kw and 3 kw.

The block storage heater operates in the same way as an electrically heated floor. Electricity is taken under an off-peak rate and the heater is charged with heat during the periods in which the electricity supply is available. The insulating

Typical cross section through floor showing withdrawable electrical floor warming installation.



Electrically floor heated block of flats at Kirkcaldy.

material between the fireclay bricks and the sheet metal case enables the blocks to be heated to a temperature considerably higher than is desirable for the exposed casing.

Since their introduction a few years ago, a considerable number have been installed in industrial and commercial premises in Great Britain and Ireland. They provide the equivalent of good central heating and are particularly effective in corridors and on staircases.

Block Heater Control

The control of the heater is much the same as for any other electrical appliance. An easily adjustable thermostat will switch off the heater when the desired temperature conditions are obtained within the building. New types of control equipment are being designed which can be used for concrete block storage heaters and for electrical floor warming installations. This equipment works in conjunction with an out-of-door thermostat and adjusts the night time electricity intake to that which is just necessary to meet the anticipated conditions during the following day. From tests which have been carried out, the installation of this simple control device will minimize consumption.

DEVELOPMENT OF OFF-PEAK LOAD
SOUTH OF SCOTLAND ELECTRICITY BOARD

	Added During 1960		Total as of 12/31/60		Kwhr Sold in 1960 (million)
	Consumers	Kilowatts	Consumers	Kilowatts	
Domestic	2,480	18,254	4,894	39,774	26
Farm	89	1,495	714	7,961	10
Commercial	1,671	39,898	7,652	171,973	159
Industrial	80	4,017	580	69,483	89
TOTAL	4,320	63,934	13,840	289,191	284

MAJOR CLASSIFICATION OF OFF-PEAK LOAD CONNECTED TO BOARD'S SYSTEM

December 31, 1960

	Kilowatts	
Space Heating		
Floor Warming	34,168	
Block Storage Heaters	80,177	
Electrode Boilers	33,184	
Other Heaters	53,024	
Furnaces	31,800	
Water Heating	23,886	
Process Heating	4,380	
Miscellaneous	28,572	
		289,191
Board Premises		12,418
Total		301,609

Are you paying for

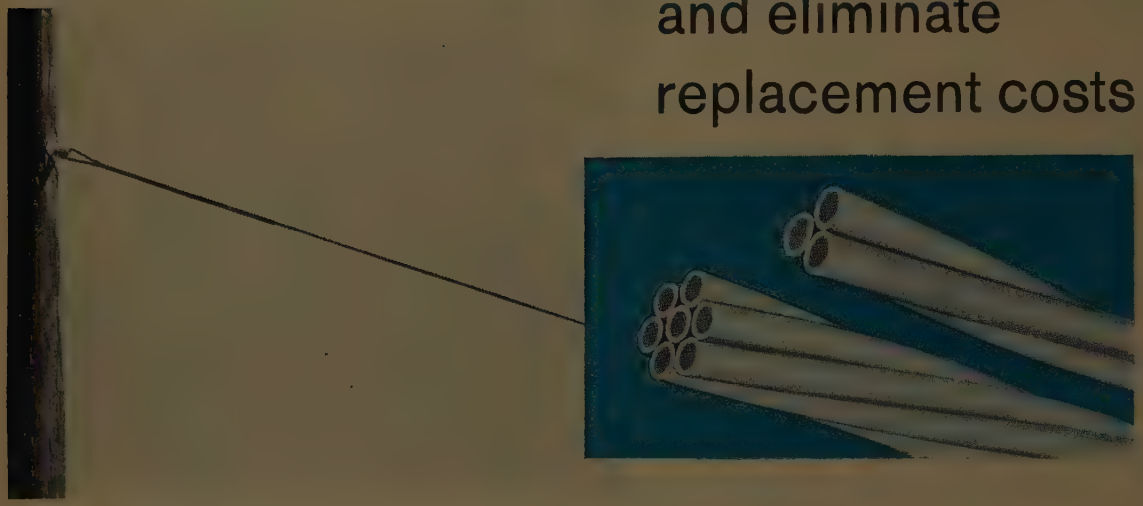
TWO GUYS

During the life of

ONE POLE?

INSTALL ALUMOWELD® STRAND ONCE

and eliminate replacement costs



There's no built-in replacement cost to be paid later when you buy Alumoweld Guy Strand. Alumoweld matches the long life of modern poles, as a guy strand should. It stays up and retains its strength, unimpaired by years of exposure to the elements, because an *extra-thick* aluminum covering (25% by area) protects the steel core from rusting.

Size for size, Alumoweld Guy Strand has the same tensile strength as extra-high-strength steel . . . weighs less . . . is easier to install . . . and will last far longer.

Why pay for two guys during the life of one pole when one Alumoweld Guy will do the job and save you money and trouble? For your convenience, stocks of Alumoweld Strand are available for immediate shipment from our warehouses in New York, Chicago, Pittsburgh and Memphis.

COPPERWELD STEEL COMPANY WIRE AND CABLE DIVISION, GLASSPORT, PA.

For Export: COPPERWELD STEEL INTERNATIONAL COMPANY, New York

Canadian Distributor: NORTHERN ELECTRIC COMPANY LIMITED

ALUMOWELD® GUY STRAND

To Steer Executive Judgement,

Reports to Management Must Be Timely, Flexible

Utility men most directly involved in the vital operation of preparing "Reports to Management" readily agree on how important such reports are in management direction . . . as they can also agree on the need for improving reporting characteristics like "timeliness" and "flexibility."

Not as well recognized, but certainly worth acknowledging are certain facts-of-life involved in reporting to management. Several were identified in a recent panel discussion in a meeting of the accounting and business practices section of the Northwest Electric Light & Power Association. Examples: (1) the need for presenting reports, not from the accountant's, but from management's point of view; and (2) acknowledging that there is no single, perfect basis of reporting.

After offering a comparison of "responsibility" reporting with "functional" reporting, L. E. Beard, general accounting manager of the British Columbia Elect. Co., stated his conclusion that at least these three points must be considered in preparing or designing management reports:

"(1) We must not assume that each level of management should receive cost reports presented in the same form. The type of information which might be of value to the lower levels of management should not automatically be the form of reporting to the upper levels; conversely, facets of the company's operations which are of prime importance to senior management should not be assumed to be the best information for inclusion in reports of those first-line supervisors who are faced with the less global aspects of company management.

"(2) In considering types of management reports we should attempt to emphasize the need for reporting costs to those members of management who can best *control* them, rather than unduly concern ourselves with the questions "whose responsible?" or "what function?"

"(3) As the prime purpose of accounting reports is cost control, it is essential that an all-out effort be made to establish standard costs; and, in evaluating performance, the inclusion in the reports of standard unit costs compared to actual unit costs, is of vital importance."

Karl J. Stott, of the Utah Power & Light Co., expressed this view about reporting to management *from* the management point of view:

"The accountant must understand the problems and needs of management and provide information useful to solve those needs or purposes. In working with upper levels of management, particularly, the accountant should individualize his reports with regard to the specific personalities and backgrounds of the recipients. One should know the personal likes and dislikes, the interests, experiences, and prejudices individual executives may have and these factors must be considered in developing and presenting reports.

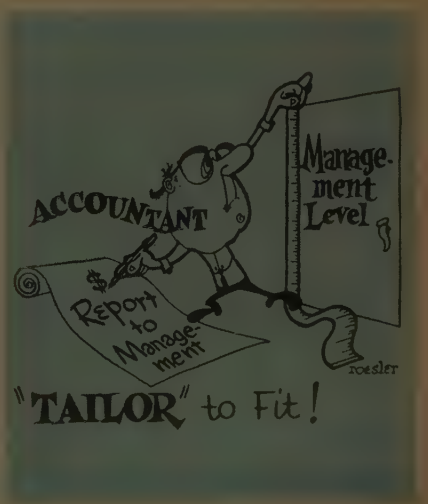
"Individuals in top management characteristically select a limited number of key items which they follow to keep themselves informed about the progress of the company as a whole. The president and treasurer of the company, especially, will have their key reports to follow and probably in broader and greater scope and detail than the items followed by other members of top management.

How significant is "timeliness" in reporting to management? Mr. Stott asserts that this factor "increases a report's value tenfold."

Another panelist, Idaho Power's C. H. Blom, stressed the need for speedier reporting in giving management advance information on "detours" ahead—events that will alter utility operations planning. Preferably *before* they happen, but certainly at the earliest possible time after unusual or unexpected events occur, he said, budget reports should be made to management so that management can decide what controls to apply to offset at least some of the undesired results. This is where "flash" reports enter the picture, Mr. Blom noted.

The fourth NELPA conference panelist, J. M. Coombs, of the Washington Water & Power Co., emphasized the importance of the role of "coordinator" in long-range forecasting. He observed:

"Long-range forecasting is most effective when a company selects an individual, a section, or a department to take the responsibility of coordinating the forecast operations. The role of coordinator is a vital one, and we think it is a proper function of a treasury accounting, controller, or financial department of the company, depending upon the particular organizational namesake observed. Coordination minimizes isolated or unrelated decision making, incompleteness of reporting, duplication of endeavor, and lack of common purpose."



INDUSTRIAL PARTICIPATION—It's AEC goal, but not the *only* one, says the director of the Commission's recently established Office of Industrial Participation. E. B. Tremmel, in recent remarks to an industry group, gave assurance that the AEC wants to strengthen industry "by every reasonable means." He added: "But, we expect industry to be reasonable . . . and we have a clear duty to the taxpayers . . ." He referred to these as areas worthy of study from the standpoint of encouraging greater private participation—chemical processing of spent fuels, fission product recovery from production plant waste streams, production of normal uranium metal, plutonium metal and U-233 alloys and compounds.

REACTOR SITE CRITERIA—Ideas of the Atomic Industrial Forum committee, submitted to the AEC in June, would alter proposed guides of the Commission to: (1) limit criteria to power reactors; (2) assure that example calculations would not be considered an integral part of the criteria; (3) replace the original population center proximity concept with a "man-rem" concept—radiation exposure limit expressed as a function of population distribution and destiny; and (4) focus more attention on the importance of reactor design, on safety features and on the interrelationship between design factors and site characteristics, distance and population density.

FLAT LEVEL OF PROTECTION is the only practical approach to insurance requirements in indemnifying licensees who possess and use substantial quantities of unirradiated enriched uranium—this is the contention of fuel fabricators, processors and users who responded to a recent AEC request for comments on a proposed change in regulations.

EURATOM PROJECTS UNDERWAY will provide up to 1565-megawatts of capacity by the end of 1965. Calling this "insufficient for the Euratom's needs in terms of experience," the Euratom Commission proposes to: participate in the cost of fuel element manufacture, to provide fuel, to contribute to the cost of reactor construction or to underwrite extra costs (over those of conventional power stations) involved in the start-up period of nuclear power stations. In June, West Germany and the Netherlands announced that new studies are being performed by Westinghouse (for a 151-megawatt plant for West Berlin) and General Electric (for a 50-megawatt plant for Holland)—capacity that would be additional to the 1565 figure.

RADIOACTIVE WASTES—IN GLASS—In the UK Atomic Energy Authority research facilities at Harwell, a pilot plant is providing data on the feasibility of storing waste materials by converting them into insoluble glass-like solids, containing from 20-30-percent (by weight) of waste oxides. Laboratory work thus far indicates that such a method may dispose of such by-products "quite safely."

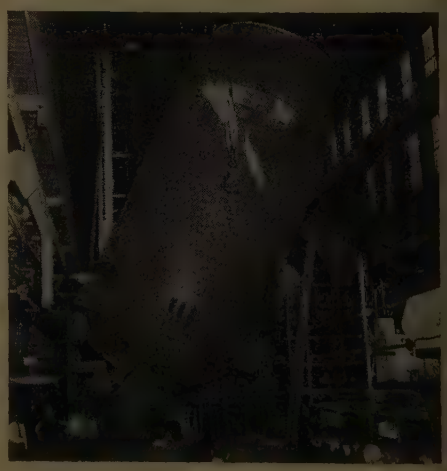
IN AMENDED DRESDEN LICENSE, Commonwealth Edison is required to make inspections of modified control rod drive mechanisms, redesigned control rods and the reactor's core grid structure. Dresden's amended license expires May 4, 1996.

ON-POWER REFUELING MACHINE, to load and unload fuel elements in pressure tubes while a reactor is operating at full power, is being designed and developed by AMF Atomics. The AMF contract with the AEC is part of a $5-million R & D program on heavy water power reactors, shared with the Canadian government.

A THORIUM—U-233 FUEL BLEND has been used to start and operate a critical assembly for the first time. At Atomics International's Canoga Park, Cal., experimental facilities, a Uranium-233 fuel system has produced a chain reaction—the first of its kind in a nuclear facility of commercial sponsors, the 15 investor-owned utilities in the Southwest Atomic Energy Associates. It was accomplished in the second in a series of experimental cores used in the Advanced Epithermal Thorium Reactor project.

NUCLEAR SUPPLIER PERSONNEL: *The Allis-Chalmers Nuclear Power Dept.* has named James J. Dickson assistant mgr., Joseph V. Supo mgr. of engineering, and Joseph H. Blanchly mgr. of projects—all in the firm's Washington, D. C. operations; *Westinghouse* has appointed Lloyd B. Kramer mgr. of nuclear reactor core development in its Atomic Power Dept.; *Metals & Controls, Inc.* has named Raymond R. Kondrat mgr. of industrial products; *General Electric* has appointed J. R. Wolcott mgr. and Vaughn D. Nixon mgr. of manufacturing of APED's nuclear electronic products section, and designated Dr. Lamar P. Bupp, mgr. of the Vallecitos Atomic Laboratory; and *United Nuclear Corp.* has appointed Wm. R. Bush asst. to the president, located in a new Washington, D. C. office.

ATOMFAIR AND CONFERENCES of the Atomic Industrial Forum and the American Nuclear Society this Fall are scheduled for Chicago from November 6-9.



Pathfinder reactor vessel is shown as it was hydrostatic tested at Allis-Chalmers. The vessel was subjected to 1050-psi pressure. In a recent press event at the Northern States Power Co. project in South Dakota, the company reported that the plant is expected to be completed on schedule, next June.

Why Use Potheads?

Because—— Potheads are the best way yet devised to terminate cables.

Why?—— Only a pothead provides a grounded, hermetically-sealed metallic housing over the bare cable for effective protection against weather and corrosive atmospheres. Extra insulation between conductors and to ground is built up in potheads with dielectric materials of high strength, amply protected by the housing against deterioration. Mechanical seal of cable to pothead is excellent, making it easy to secure cable termination solidly.

True—— There are other methods of terminating a cable. These are good and may be entirely adequate for certain conditions. But only a pothead has the extra characteristics that pay off in best service over the years.

What Extras?—— Potheads are best because they have extra features to enhance life, reliability, and continuity of service, while requiring minimum maintenance. They have extra stamina, too, for the difficult situations and for emergencies such as switching and lightning surges, corrosive salt and industrial fumes, and unusual cable-support problems.

G&W—— Standardized potheads covering 80 percent of uses are available for fast off-the-shelf delivery. Other potheads are available for special uses or can be designed for even the most unusual cases. Other types of termination are also available. Write G&W about your problem or contact your nearest sales representative. Data is available on both standard and special-use potheads upon request.

G&W ELECTRIC SPECIALTY COMPANY
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superior quality standards — inspired specialized design

A61-1

N. C. Supreme Court Sustains Utility on Rate Base, Promotion Expense

State Supreme Court orders Commission to make a finding of Fair Value in arriving at Rate Base . . . reverses Commission in its disallowance of portion of actual promotion expenses.

In the original case before the North Carolina Commission the Piedmont Natural Gas Company sought to recover increased charges for gas from its supplier, the Transcontinental Pipe Line Corporation, and also asked the Commission to make a determination of rate base based on fair value. The Commission having heard such evidence gave what it called "minimal" weight to fair value, in other words, substantially nothing, and found in effect a rate base predicated on net original cost. The Company thereupon took the case to the Superior Court of Mecklenburg County on appeal, and this Court in turn sustained the Company. The Commission thereupon appealed to the Supreme Court for a ruling. The Court noted in part that:

"The Commission found $18,400,000 to be the fair value of Piedmont's property in carrying on its business in North Carolina. Piedmont contends the finding is not supported by competent, material and substantial evidence. It argues the Commission set out to have Piedmont absorb Transco's rate increase. To accomplish this result the Commission accepted $1,104,000 (shown by the test period) as the net return. Likewise, it fixed six per cent as the proper rate of return. To justify both figures required a rate base of $18,400,000. As so fixed, the base is a quotient or forced figure and is not supported by evidence. Piedmont further argues not only the figures but the concurring opinion of Commissioner Worthington and the dissenting opinion of Chairman Westcott support this view. Judge Campbell (of the Superior Court), in his order of remand, stated: 'It would not be proper for the Commission to arrive at the fair value rate base by capitalizing earnings under the existing rates at the determined rate of return or by any such arbitrary calculations whereby rate base is a mathematical product or quotient from other determinations, instead of making, as the law requires, a true finding of the fair value of the property based upon evidence of value independent of other determinations necessary in the proceeding.'

"Piedmont claims, and Judge Campbell found, that the rate base of $18,400,000 was the result of calculation, using the company's net profit for the test period, and six per cent as a fair return. These calculations fixed the base rate as stated above. If we disregard the foregoing claims, nevertheless errors of law appear in the Commission's determination. These errors are sufficient to require that the proceeding go back for further consideration and findings. The order reveals the Commission disregarded altogether the evidence of replacement cost in arriving at fair value."

It is of interest to note that the trended net original cost findings which were put in as evidence of value by expert witnesses, were in the order of $32.6 million, or more than 77 per cent higher than the net original cost actually found.

The Commission made the statement that little weight is given by most other jurisdictions to trended original cost in rate base determination, and mentioned among these the Central Illinois Electric and Gas Co. 6 PUR 3rd 108 (Ill. 1954) and also the Montana-Dakota Utilities Co. case, 28 PUR 3rd 355 (Mont. 1959) as being authoritative statements in this respect.

With respect to the Montana-Dakota case, the Supreme Court observed that:

"The case actually held: 'While this certainly is a recognized method, we would hesitate to place entire reliance on the trended rate base.' These cases are far from holding the evidence is worth no more than 'minimal' consideration."

The Court continued:

"In these times of increased construction costs and decreased dollar value trended cost evidence deserves weight in proportion to the accuracy of the tests and their intelligent application. The objections to such evidence apparently came from jurisdictions where the base rate is fixed at 'book value' or 'original cost' rather than present value.

* * *

"The Commission, influenced no doubt by other commission holdings in original cost states gave it only 'minimal' consideration and further discredited it by saying it was not altogether ignored. Obviously the Commission brushed the evidence aside as of little or no consequence. We do not undertake to say what weight the Commission should have given Cannon's and Muhlfeld's (the Company's witnesses) evidence. What we do say is that it should have been weighed fairly in balanced scales. To give it minimal consideration only constituted error of law."

Because of the foregoing considerations the Court noted that:

"On the record, we must agree with Judge Campbell's finding that a rate base of $18,400,000 is not supported by competent, material and substantial evidence. We, therefore, agree with the Judge and Chairman Westcott that the proceeding should be remanded for such further study and up-to-date findings as will enable the Commission . . . to find the fair value of Piedmont's facilities."

Promotional Expenses

In commenting on the Commission's disallowance of Piedmont's promotional expenses, the Court's opinion noted:

"The trial judge also found error of law in the Commission's refusal to allow Piedmont's promotional expenditures as operational costs. Throughout its order the Commission recognizes the high quality of Piedmont's management. The record shows the expenditure was actually made in its promotional activity. The Commission ordered the amount reduced by $186,000, upon the basis of Cleveland's evidence that the percentage expendi

(Continued on page 65)

BY A. C. FARMER
ECONOMIC CONSULTANT

Flight From The Dollar

A flight from the dollar would be possible if the American people ever should reach the conclusion that prices continuously would be increased and that the purchasing power of the dollar continuously would be reduced.

In the year 1961, a flight from the dollar is not a reasonable expectation but due to the reckless and continuous expansion of both public and private debt the American government, within a few years, will have to choose between a deflation which would be ruinous to debtors, and to owners of equities, or an inflation that would be ruinous to creditors and to owners of fixed income securities, life insurance, pensions, and annuities.

The economy faced an identical problem following 1929. At that time deflation was accepted as the only possible solution of the problem that resulted from accumulation of an excessive amount of private debt.

In 1929 the net private debt approximately was $160.0-billion compared with a volume of money in the economy of approximately $55.0-billion. In 1929 bank loans at the commercial banks approximately were $35.0-billion compared with demand deposits of only $22.5-billion.

The roof fell in when the creditors demanded repayment of the borrowed money.

It is of course true that the creation of an excessive amount of money at that time, via the government printing press, would have changed the whole picture in favor of the debtors and adversely for the creditors, but in those days such a solution was not given the slightest consideration. Anyone who proposed it would have been considered worse than a madman.

Today it would be inconceivable to believe that any Administration would permit the economy again to be put through the wringer, as occurred in 1930 to 1933, in a general liquidation of accumulated debt, and therefore it becomes a certainty that if the people of America again should face such a crisis, government spending via the printing press will be the method employed to deal with the emergency.

The reason for concluding that a crisis similar to what occurred after 1929 again is approaching is that since the end of World War II, private debt has been expanding at 10 percent per year cumulatively. And, the critical point will be reached when the net private debt equals $900-billion in comparison, at the same time, with an estimated volume of money in the economy of $300-billion.

Unaware of the approaching storm, many individuals in the intervening period of time will choose to put their money in fixed income securities. This always has been true in such a period. For example, in 1929 time deposits were $28.7-billion compared with demand deposits of $22.5-billion.

The following tabulation of savings bonds, negotiable bonds, and time deposits show the upward trend of the total that now is taking place. Time deposits already are in excess of demand deposits.

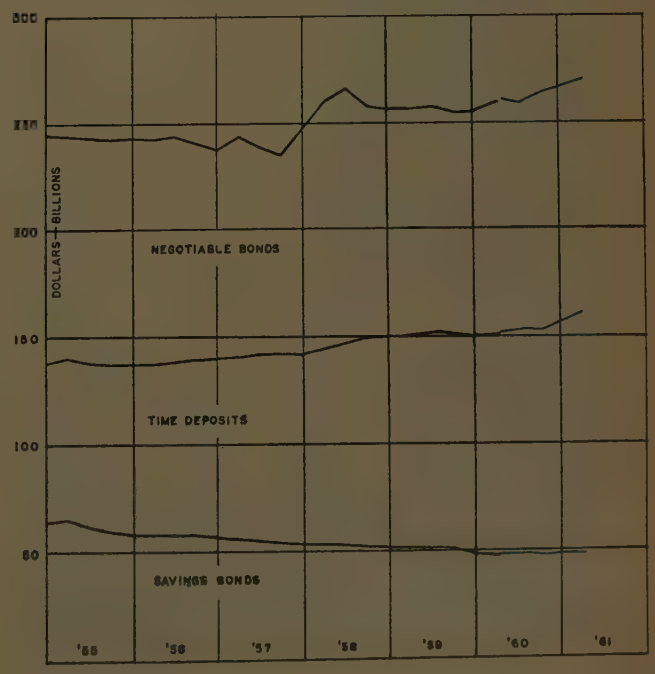
FIXED INCOME SECURITIES AND TIME DEPOSITS

	Non-Marketable Savings Bonds	Time Deposits Commercial and Savings Banks	Negotiable Bonds N. Y. Stock Exchange	Total
	Dollars in Billions			
Mar. 1955	64.0	76.2	104.3	244.5
Mar. 1956	59.0	79.3	103.8	242.1
Mar. 1957	56.7	84.6	101.6	242.9
Mar. 1958	53.1	92.5	114.8	260.4
Mar. 1959	51.9	99.5	106.6	258.0
Mar. 1960	48.4	102.2	109.7	260.3
Mar. 1961	48.0	111.6	109.9	269.5

The chart also shows the uptrend in savings that now is becoming more pronounced. Savings will prove inadequate because one group of people is going in debt faster than another group is saving money.

Eventually it will be proved once more that no country and no people can spend themselves into perpetual prosperity by the use of an unlimited amount of borrowed money. But that is what America today seems to be attempting.

The crisis that eventually will result from the national liquidation of an excessive amount of private debt could be followed by another period of liquidation and deflation similar to 1930-1933, but a more likely conclusion is an excessive inflation will be employed to counteract an excessive deflation. If so, in those days the inflation will be accompanied by a flight from the dollar.



ELECTRIC HEAT . . .

(Continued from page 35)

ing, installation and operation of the heating equipment is similar to that described for the asphalt tank.

A special high-temperature heating cable is used to wrap the pumps and pipes. A thermostat controls the temperature of the pump and pipes that are in daily use. For the unloading pump and pipes, which are infrequently used, manual control is deemed adequate.

Strip Heaters

Four 750-w and two 1,350-w strip heaters are bound to the metal under-surfaces of the pug mill. These are wired on two circuits for increased diversity of control. During periods of continuous or near-continuous operation, it was found that a pre-warm-up in the morning would suffice for the heating of the pug mill.

Two thermostats, connected in series, are used on each tank for product temperature control and for increased safety. Thermostats are also mounted inside two of the 2-in. pipes that house the heating elements for each tank. Purpose of these thermostats is to prevent exceeding the char point as well as to insure increased protection against element burn-out.

Insulation

The tank and pipes for the 300-F asphalt are insulated with 6 in. of fiberglass. The 150-F oil tank has 4 in. of insulation. This amount of insulation is economically justified for this job by: the temperature difference between the heated product and the atmosphere; the cost of the heating energy compared with the cost of the insulation; the efficiency of the heating plant; and the duration of the heating period. In this design, using primarily emersion electric heaters, the efficiency of the system approaches 100%. The author was instrumental in the sale of the electric equipment.

Electric heating applications like this one—on the increase—represent a growing part of the predicted sales of about 350-billion kwh to industrial customers in the U. S. this year.

Color Of Series Lamps Can Reveal If Regulator Setting Is High Or Low Explained At Mitchell Meeting

F. N. Wones, Dayton Power & Light Co. and Co-chairman of the conference, opened the Fourth Annual Street Light Maintenance Conference in Muncie, Ind., by pointing out that the main objective of the conference was for the operating people to share maintenance experience. He also listed the following *basic considerations* which should be of *prime importance* if installation, operation and maintenance costs for adequate and reliable lighting were to be accomplished economically:

1. Develop standards for design, service and maintenance.
2. Keep records on service experience and performance.
3. Train and properly equip personnel.
4. Set up inspection routines and schedules.

Political Bait

Street lighting should not be used as political bait according to K. S. Fields, Ebasco Services, Inc. He said that utilities should be selling continuity of light and lumens or intensity. Fields stated that, in general, street-light maintenance equipment has not been modernized and efficient, economical maintenance requires special trucks.

Street-Lighting Trends

The trend in street lighting seems to be toward multiple, individually-controlled lights and steady-state or tubeless controls, Fields commented.

A. M. Bjontegard, Design Engineer of G-E's Outdoor Lighting Dept., emphasized the demands for good lighting of streets and highways due to the increase in nighttime driving. He also called attention to the trend toward *private lighting* — especially in the rural areas. Bjontegard discussed some of the latest luminaires which his company has developed including a mercury luminaire using an acrylic refractor and the ballast contained within the housing.

Ballasted-Hood Units

There was some concern that became evident during a discussion on ballasted-hood units regarding the effect this design would have on glassware breakage and if it is able to withstand all weather conditions. J. E. Tewart of Westinghouse Electric Corp. claimed that the trend to ballasted-hood units will be accelerated with the use of more plastic.

Tewart described a new open-bottom refractor that has recently been added to the Westinghouse line and is made up of four quadrants of plastic.

M. E. Mitchell, Mitchell Maintenance Co. and the other Co-chairman of the conference, described the effects of weather on the open refractors and emphasized frequent cleaning. He said that it is necessary to wash these units periodically—not only at the time of a lamp burn out.

Simple Choke Reactors

D. W. Morrill, Line Material Industries, called the group's attention to the growing use of simple choke reactors in mercury installations. He mentioned that although these reactors lend a very economical first cost, generally they had the reverse effect on maintenance—unless an excellent control is kept on voltage, washings and relampings.

Mfrs. Need Operators' Reports

Morrill stressed the manufacturers' need for better reports from the operators regarding their experience with equipment. He emphasized that better records by the operating companies would be of great benefit to the mfrs. in developing future equipment. Morrill said that there is a "crying need" for an industry-wide investigation of wind and vibration upon the combination of luminaire brackets and poles. In the discussion of the wind effect on the poles and brackets for luminaires, Charles Willard of Joslyn Mfg. Co. suggested that perhaps wind tunnel tests should be conducted to learn some of the answers.

A. A. Young, West Penn Power, related their experience with poles turning 90 degrees in the wind on fluorescent installations.

During extensive investigation at Dayton Power & Light Co. relative to poles turning in the wind, R. L. Stump described how they used various mixes of earth, large stones and gravel to back-fill around wooden poles. Results of their torque tests indicated that it required a low value of 1050 ft lbs to rotate a pole back-filled with gravel to a high value of 4400 ft lbs with crushed rock.

Incandescent Lamps

In his discussion on incandescent lamps, R. J. Eddy of Sylvania Electric Company mentioned that his company was investigating the fuses which are used on all multiple-type lamps to cope with momentary line surges. *Most of the group expressed surprise about the fuse in the multiple lamps*—they did not realize that the mfrs. have been using a fuse wire for one lead in multiple lamps.

Myron Clark of Indianapolis Power & Light Co. reported that his company has experienced 2.3 percent leakers on new lamps. George Smith of Duquesne Light Co. reported similar results on their tests of new lamps before they are put into service. M. E. Mitchell mentioned that some leakers are caused by screwing the lamps into the sockets too tight.

In a discussion about bumping lamp filaments back to the center of the bulb after they have been knocked out of position during shipment, there was some disagreement among manufacturers' representatives on this subject.

Mercury Lamps

W. F. Till of Westinghouse Lamp Division reported that much of the improvement in mercury lamps is due to the industry's concentration on one type of mercury-vapor lamp and not on three tyes—which has been the case in the past. He mentioned that there is some difficulty in getting lumen depreciation and

LAPP CONTROLLED-POSITION CONSTRUCTION

A new type of insulator from Lapp offers cost reduction, economy of space and convenience of construction to solve many problems of transmission line design

Lapp strut insulator, 117" long, matches electrical and mechanical ratings of an 18-unit string of 5¾" x 10" standard suspension insulators.

Lapp Controlled-Position Construction is a new technique in transmission line design which utilizes porcelain rods or struts—with fog-type leakage corrugations—to hold in fixed position and/or restrain high voltage conductors.

Use of Lapp Controlled-Position Construction on tangent structures invariably results in more compact design with consequent lower structure cost and narrower right-of-way requirements. Its use in jumper restraint provides neat efficient appearance and eliminates radio and TV interference such as is generated by lightly-loaded suspension strings.

WRITE FOR BULLETIN. Lapp Brochure No. 478 describes the development and application of Lapp Controlled-Position Construction . . . suggests design procedures . . . lists specifications and characteristics of Lapp strut insulators. Write for your copy. Lapp Insulator Co., Inc., Le Roy, N. Y.

Lapp

138 kv LINE AT HALF-PRICE! Conversion of 69 kv line to 138 kv accomplished with Lapp Controlled-Position Construction. Existing tower required only some reinforcement. Short crossarms are adequate, however, with use of Lapp strut insulators, to control dead-end jumpers, prevent their swinging, and maintain clearance from tower and between phases. Total construction cost: less than half that estimated for a new 138 kv line.

LONG JUMPERS STAY PUT! Lapp Controlled-Position Construction restrains long jumpers. This 115 kv dead-end structure keeps the line within its limited right-of-way—Lapp struts hold the 26 ft. jumpers safely away from the tower. No radio or TV interference either, as occurs with suspension strings used for jumpers.

CUTS SHORT ON THE TURNS! Lapp Controlled-Position Construction is well suited for angle construction at high voltage. As on this 220 kv line, Lapp struts supported from crossarms and attached to lower end of suspension string are used to maintain clearance, holding conductor out and away from the tower. No need for longer crossarms, arm-end brackets or other construction that add cost or right-of-way requirements.

RADIO-TV INTERFERENCE ELIMINATED! As originally built in 1924, this 115 kv line used wood lower crossarms and tie-down insulators to stabilize conductor at angle structures. Recently reconductored, using Lapp Positioned-Construction. Lapp strut insulators position conductor and assure tower clearance. Radio and TV interference generated by tie-down insulators is now wholly corrected.

BEFORE 35-year old steel tower line carrying three 69 kv and three 12 kv circuits. Increased load required replacement of the three 69 kv circuits with two 115 kv circuits. The three 12 kv circuits were to be retained, and old portal-type steel structures were to be used; additional right-of-way not available.

AFTER Same line after conversion. Two reinsulated 115 kv circuits are suspended from original crossarms. Lapp strut insulators attached to extension brackets on the towers push conductor-insulator assembly up and out, provide adequate clearance between circuits, tower and ground. 12 kv circuits remain.

mortality rate curves for mercury lamps due to the fact that tests for such data can not be accelerated by over-voltage like it can in the case of incandescent lamps.

Some of the manufacturers are coating their mercury lamp bases with graphite due ot the fact that the lamps last so long and corrosion can become a problem between base and socket, according to Till. He pointed out that this corrosion can lead to overheating and difficulty in getting lamps out of their sockets. Till also made the general observation that he believes the industry is using about 50 percent clear mercury lamps and 50 percent phosphor coated.

Fluorescent Lamps

The history of outdoor fluorescent lamps was outlined by D. A. Toenjes of G-E's Large Lamp Dept. He mentioned that England used outdoor fluorescent lights in the middle 40's, but they did not become practical in the U. S. until the higher output lamps were developed in the early 50's.

In a discussion regarding the light output that could be expected from fluorescent lamps after 7500 hours of operation, the figure of 60 percent of the initial lumen output was arrived at as a reasonable approximation.

Regarding the question of safety in disposing of fluorescent lamps (which referred to the scare some ten years ago relative to beryllium poisoning), it was brought out that beryllium phosphorus is no longer used in fluorescent lamps. However, the current phosphor used can be irritating and care should be taken to avoid inhaling too much gas or getting the phosphor into open cuts.

Miscellaneous Troubles

M. E. Mitchell and G. K. Harrington of Mitchell Maintenance Co. gave a demonstration relative to various sources of street-lighting trouble. Mitchell pointed out that cutouts can be a real cost saver and should receive more atention from operators to eliminate premature failures. He mentioned that replacing the cutouts in two fixtures on each side of a section where lightning has punctured cutouts is a good practice as their experience has found that many times these adjacent cutouts fail within the next couple of days.

A device to reduce lamp breakage due to vandalism was demonstrated by D. L. Mitchell, Jr. of Mitchell Plastics, Inc. He said that these protectors were developed in conjunction with the Duquesne Light Co.

The Mitchell Maintenance Co. has cautioned operators against using *hook-on ammeters* to adjust constant-current transformers as they are not accurate enough for this job, according to Mitchell. A demonstration to prove these inaccuracies was made by comparing readings of a hook-on ammeter with those of a laboratory-type portable unit.

The group examined a new truck that was designed by Mitchell Maintenance for spot replacements. It is smaller than the standard street-light maintenance truck and is constructed so that the driver can enter the platform from inside the truck.

Color Of Lamp Is Clue To Current Setting

Samples of lamps that were removed from series circuits were passed among the group and Mitchell explained how to tell whether the regulator setting was too high, too low or normal by observing the color and amount of darkening of the lamps. He also explained some of the tell-tale indications of a lamp that was burned out due to lightning.

Photo Controls

J. C. Yeager, Line Materials Industries, gave a presentation on photoelectric controls. He stressed that reliability was the major objective in design of photo controls. Yeager compared the reliability of the old tube-type controls (which had failure rates as high as 51 percent per year) to tubeless controls with a failure rate of about one percent. A very interesting demonstration of a streetlighting control, that included a cadmium cell and a mercury solenoid, was given by O. T. McIlvaine, Cetron Electronics. Robertson of Fisher-Pierce discussed cadmium sulphide photo controls and described a new ac unit, which consists of a cadmium, sulfide cell in series with an ac relay.

Frank Wones outlined DP&L's procedure for handling field failures of photo controls. He said that field failures from all divisions are sent to the Dayton meter shop for repair. Wones mentioned that each field failure costs about five dollars to replace—two dollars for the spot call and three dollars for repair of the unit. In a poll of the seven operating cos. represented, eight do the bulk of the repair on photo controls in their shops and nine return the units to the mfrs.

Grounding Discussed

K. S. Field of Ebasco noted that there seems to be a trend towards the grounding of streetlighting brackets for safety reasons. He found that nine of ten cos. that he visited were grounding or considering grounding the brackets. However, of the 17 operating cos. represented at this meeting, only one presently grounds the brackets.

Zimmerman, Long Island Lighting, explained that a few years ago it was their policy to ground brackets, but this resulted in several pole fires; so the practice was abandoned.

In a discussion on grounding, it was emphasized that it was necessary to make good grounds if the brackets are to be grounded as poor grounds can cause lamp failures.

Construction Techniques

J. L. Redmond, Indianapolis Power & Light, gave a presentation on underground construction and maintenance at IP&L. He mentioned that considerable savings were realized by changing from hand trenching to mechanical. Redmond showed a special tool used to drive conduit under sidewalks and driveways with a jackhammer. The tool was made from an old jackhammer drill.

Wones described DP&L's experience with precast pole bases. The present cost of making their own five-ft, one-ft square, precast concrete bases is $7.70 each.

Performance Improvements

Maintenance productivity at Cleveland Electric Illuminating Co. has been increased from 55 lamps per 3-man crew per day in 1947 to 145 per 2-man crew each day, according to O. D. White of CEI.

CB TAPES INCREASE YOUR CABLE'S LIFE AND EFFICIENCY

Maintain a low power factor by keeping the insulating oil clean, stable, and efficient. Because copper, oxygen and heat are present, the insulating oil in any paper insulated cable is subject to oxidation and gives off products that increase power factor. Anaconda greatly reduces this power factor increase by wrapping each conductor and the insulation in highly adsorbent carbon-black tapes. These patented tapes adsorb the oxidation products that the oil develops, keeps them outside the dielectric field. Result—the oil remains clean, pure and dielectrically stable far longer.

These remarkable tapes provide other advantages too. They reduce strand discharges. They also diminish surge currents, and provide remarkable cable stability even when subjected to severe loading cycles.

Because Anaconda supplies all the accessories you need, you also get the advantages of completely compatible components and the reassurance of unit responsibility by the manufacturer.

For more information about Anaconda CB* cable, contact the Man from Anaconda or Dept. EFL-1-ELP, Anaconda Wire and Cable Company, 25 Broadway, N. Y. 4, N. Y.

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CB* POWER CABLE

*Reg. U. S. Pat. Off

NEMA's First Western Conference

Views Growth Prospects: "Fabulous" Out West, But, Region Shares Problems Of The Industry

For the first time NEMA held a Western Conference, in Los Angeles last month, and the outlook was impressively optimistic—"fabulous" regional growth within an industry that enjoys a tremendous growth potential. Yet, industry spokesmen, acutely conscious of the effects of anti-trust developments, tempered their optimistic views with expressions of concern for profit squeeze and ethical conduct in the months ahead.

The conference keynote speaker, Chris J. Wittig, Westinghouse vice-president-consumers group, noted that the electrical industry today has a growth potential which far exceeds its advancement during the first 75 years of its history. But, he added, with these opportunities come problems and challenges of equal stature. He said:

"Consider what these challenges must bring about:

"New and greater emphasis on research for new materials . . . development of new and lower cost products to beat the foreign import threat, and the development of new markets to stimulate consumption and provide more jobs. We must also put more steam behind the demand for improved and extended education for our young people . . . for tax reforms to provide better incentives for risk capital . . . for improvement and modernization of our plants, our methods and our products . . . and, for a general improvement in the procedures of management of businesses."

The Westinghouse official turned to another category of challenges, noting that in this area, "there are no shortages." He explained:

"As businessmen, we're all concerned by the continuously rising costs to make our products in a climate which has seldom permitted increased prices. With this price squeeze, many companies in our industry are conducting their businesses at high level break-even points. Many also find themselves with surpluses of production facilities.

"And, these problems are being further complicated by the competition of low-cost, low-price imports.

"Now, if our industry remains static, if it figuratively wrings its hands or reaches for panic buttons at the start of each business day, we can only expect that ours will be a particularly difficult business life since I'm sure you'll agree with me that costs will certainly continue to rise, that competition—both foreign and domestic—will get rougher rather than easier in the future . . . and with these conditions we stand little chance of getting higher prices.

"We're all deeply aware of one other management challenge which faces our industry—the challenge of ethical conduct. We know that our efforts in the past to assure compliance with the antitrust laws were insufficient. And I'm sure that I speak not only the sentiments of my company but of the entire industry when I express our intense determination to make as certain as humanly possible that nothing like the recent antitrust episode ever happens in the future."

NEMA Head: Outlook Bright

NEMA's President, A. D. R. Fraser, who is also president of the Rome Cable div. of the Aluminum Co. of America, also referred to the anti-trust situation, saying that these unfortunate events have "brought embarrassment upon the industry whether directly or indirectly affected. We hope," he added, "that time will heal the wounds; that the remedial steps which have been taken will prevent the recurrence of the situation, and that achievements and deeds will restore the industry to its rightful place as one of the greatest assets of the United States."

Mr. Fraser reported that NEMA has been asked by one of its member companies "to draw up a code of ethics for the industry." (Editor's note: NEMA has since adopted a "Statement of principles" to guide manufacturers in compliance with anti-trust laws. Among "obligations" accepted: to guard freedom and independence in marketing and pricing, including all terms of sale.)

But, Mr. Fraser had arguments for the industry's bright future, too. He noted, for example, that the consumption of electric power should reach 1.5-trillion kwh by 1970 and 3-trillion by 1980. For the manufacturing segment, the NEMA president forecast an output of $50-billion in electrical equipment by 1970.

C. W. Leihy, publisher of "Electrical West" reported that the 13 Western states (California, Oregon, Washington, Wyoming, New Mexico, Utah, Colorado, Idaho, Montana, Nevada, Arizona, Alaska and Hawaii) "together represent about 23-percent of the total U.S. utility market and nearly 29-percent of the total construction market." With the West growing twice as fast as the rest of the country, the utility industry today is "investing $1-billion dollars annually" in plant expansion and improved facilities, the publisher declared.

Mr. Leihy described the Western market as more "free-wheeling" than markets elsewhere, and said "Western customers were a little more inclined to try the newest innovations first." He cited these experimental and proven "firsts" in the West: high voltage transmission, ranch type homes, electric house heating, freeways, supermarkets and shopping centers.

Mr. Leihy warned electrical manufacturers in other areas of the nation that the West is "becoming a marketing entity in its own right, with more and more manufacturers recognizing that there is sufficient volume of business in this region to support West Coast manufacturing facilities."

Cites Roadblocks To Growth

The publisher also cited these roadblocks to the continued growth of the electrical industry in the West: competition from gas equipment, foreign imports of heavy electrical equipment and small appliances, and lack of unified support by all branches of the electrical industry in working toward the development of programs which will be beneficial to special Western interests, as well as to the rest of the nation. He urged NEMA to undertake this unification role with the help of all Western manufacturers.

Aluminum-Steel Towers Installed By Niagara Mohawk

Two hundred electrical transmission tower bases have been "crowned" with aluminum structures by Niagara Mohawk Power Corporation. The resulting composite aluminum-steel towers are a new landmark on the utility skyline, and represent a new use for the light metal. With a base of steel, the tower tops, "cage," crossarms, and "goathead" are of aluminum.

Vacuum Impregnating System Gives Transformers Improved Dielectric Properties

Better electrical transformers, with improved dielectric properties, are now being produced in a new twin-chamber vacuum impregnation system. A unit has recently been delivered to the Renfrew, Ontario, plant of RCA Victor Company, Ltd. (Canada) by F. J. Stokes of Canada, Ltd., Toronto.

The system will impregnate the transformer cores and windings with a polyester resin which increases heat dissipation to permit a cooler operating unit.

Westinghouse Scientists See Ceramics Best Material For MHD Generators

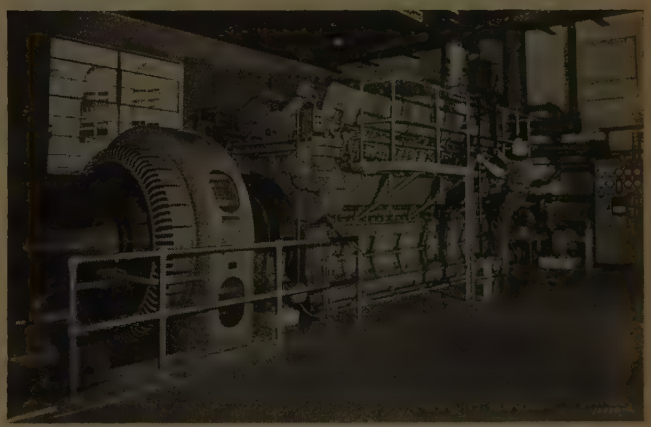
Ceramics, rather than iron and steel, may be the key materials for building the electric power generators of the future. Westinghouse Electric Corporation scientists have shown them to be the best substances so far discovered for holding in check the white-hot stream of gases from which electric power is obtained in magnetohydrodynamic (MHD) generators. Using ceramics, Westinghouse scientists have operated an experimental MHD generator continuously for record periods of time up to 50 minutes, it is said.

Phelps Dodge Develops New Copper-Nickel Alloy

Development of a new high-strength and low-cost copper-nickel alloy, named Cufenloy-40, was announced today by the Phelps Dodge Copper Products Corporation. The new alloy initially is intended for use in condenser tubes for special applications in the power industry.

According to the firm, Cufenloy-40 condenser tubes are produced with tensile strength exceeding 85,000 psi, and will more than withstand 600 degree temperatures. Although its properties are practically identical with those of nickel alloys, the cost of the new product is approximately one-half their price, the company says.

New Duafuel Unit Drops Average Fuel Cost



A new Nordberg engine is leading the steam-diesel team at the Quakertown, Pennsylvania, municipal electric plant to the best production economy in the plant's long history. Burning gas at 51.74-cents per MCF and pilot oil at 9.69-cents per gallon, the new Duafuel unit is producing a kilowatt-hour at an average fuel cost of 5.27 mills for dual-fuel operation. Total plant average for 1959 was 8.397 mills.

NEW PRODUCT DESIGN

New Distribution Arrester

Ratings of the recently introduced type LV distribution class arrester have been extended from 27 to 30 kv, it was announced by the **Westinghouse Electric Corporation.** The new line now is rated from 3 to 30 kv.

All design features of the type LV arrester have been retained in the 30 kv addition. A nonexplosive dropout mechanism vents internal pressure for safe handling, preventing line lockout on any distribution circuit in the event of arrester damage, the company says.

Circle item #1 on reply card

Underground Cable Testing

A new line of equipment for underground cable testing and fault locating by power company crews, said to be quicker and safer, is designed around a high voltage portable power supply unit made by **Davenport Manufacturing Division of Duncan Electric Company, Inc.**

Designated as model XVD400-35-10C, the unit comes in two sections each weighing about 115 pounds. It provides 0-45-kv dc at maximum current of 35 ma., or 0-30-kv dc at 50 ma.

Included with each unit are four-foot interconnection cables, a 10-foot input cord and a 40-foot shielded output cord. The cables can be stored under the hinged cover of the high-voltage section when not in use. Input power required is 115 volts, 60 cycles, single phase, drawing approximately 2.5 kva.

Circle item #2 on reply card

Gas-Filled Transformer

The General Electric Company's Medium Transformer Department is now marketing a gas-filled, sealed dry-type transformer in ratings 300 kva and above, 15 kv and below.

Utilizing C_3F_8 (perfluoropropane) gas as an insulating/cooling medium, the new units offer higher impulse levels, lighter weight, and

smaller dimensions, according to the company.

The gas is non-flammable, non-explosive, and non-toxic, and will not decompose even under extremely abnormal operating temperatures, the company says. No rotating equipment or other moving parts, it is said, will be utilized to cool the unit. The basic impulse level of the 15-kv gas-filled unit is 95 kv, compared with the standard impulse level of 50 kv for a comparable 15-kv nitrogen-filled unit.

Circle item #3 on reply card

Ground Detector and Alarm

Immediate detection of accidental grounds on power lines is provided by the Brunt Ground Detector and Alarm, a development of **Parr Manufacturing Corporation.** Three phase indicator lamps on the

face of the instrument glow with equal intensity when it is wired to a power system. As a ground occurs, one of the lamps dims or goes out, indicating on which phase the ground has occurred. Simultaneously a red warning lamp flashes steadily and a relay actuates an audible signal (bell or horn) which should be connected to the instrument.

The warning flash and audible signal continue until a reset button is pushed; the red lamp glows until the ground is cleared. Three phase indicator lamps then resume their normal, uniform brightness.

Circle item #4 on reply card

'Cary-Lift' Loader

Pettibone Mulliken Corporation has introduced a new 8,000 lb. capacity Cary-Lift loader for operation over rough terrain and unpaved yard areas. An unusual feature of the new model Super 8 Cary-Lift is its ability to hydraulically extend the forks 10 ft. 6 in. forward. This enables it to reach over obstacles to pick up or place a load. Maximum fork elevation is 144 inches.

Circle item #5 on reply card

Data Collection System

General Electric's Computer department has introduced a Critical Path Method programming package which drastically reduces the need for managerial guesswork and delivers precise data required for timely decision making.

It is only necessary to enter specific data, then the computer takes over and provides a plan of implementation based on optimum utilization of time and money.

Circle item #6 on reply card

WHAT THE COMPANY . . .

(Continued from page 37)

feels better, loves better and, God forgive me for mentioning it, he works better and thus, profits better.

You have a wonderful package to market, but you have to make calls and tell the right people about it in terms of benefits to them.

When the AT&T were preparing to launch their selling campaign on the Princess phone, data phone, inter-com, and the other features you now find so successfully promoted, they made a very extensive market survey to find the most important requirements for good successful marketing of a product. They came up with seven. Here they are:

The product must be . . .

1. Easy to buy
2. Readily available
3. Priced right
4. Modern and forward looking
5. Easily maintained
6. Adequately advertised and promoted
7. Aggressively sold

Our product meets all of these requirements except perhaps the last—aggressively sold?

Greatest Service

Let's make sure that you and I meet and fulfill this requirement to the fullest, plus one more important ingredient. The greatest service you can render is to inspire your customers to modernize in such a manner that they will stay competitive and prosperous in the company's service area and grow and expand.

In conclusion, let me repeat the three areas where I believe improvement can be made.

1. Spend more time communicating with your customers.
2. Assist, service and sell to Mr. Right Man. Stop making "Hello Joe" calls.
3. Relate product features to customer benefits.

My final plea is: Let's do a better job of relating product features to customer benefits.

REGULATORY . . .

(Continued from page 52)

ture was in excess of the national average for companies retailing natural gas. No effort was made to ascertain the expenditures by companies in Piedmont's class or in its territory. In this connection it must be remembered that Piedmont in 1952 changed over from manufactured to natural gas. All customers had to be sold on natural gas. New customers had to be won. Competition with electricity and oil had to be met. Promotion in a new field faced Piedmont. It is doubtful for that reason whether evidence of the national average should be admitted at all. The average of companies in Piedmont's classification, yes, but the national average doubtful."

The foregoing rather transparent device is of course not new. A few years ago in a rate proceeding involving an electric company in the southwest promotional expenses of the petitioner were substantially reduced on the grounds that the ratio of these promotional expenses to total expenses were much higher than the same ratio of the private Class A and B electric utilities. The reason that the petitioner's ratio of expenses was high was simply due to the fact that being a utility which used gas for fuel, its overall expenses were much smaller relatively speaking than those of the industry as a whole where the predominant fuel is coal.

New High-Voltage Outdoor Test Lab . . .

The new Ohio Brass outdoor lab's heavy schedule calls for frequent night testing. Here a tripod insulator stack flashes over on 60-cycle test—at well over a million volts line to ground.

A three-year construction program has resulted in a new high-voltage test facility at the Ohio Brass Co.'s Barberton, Ohio plant. The outdoor facility is capable of testing transmission line components at well over one-million volts, and will eventually lead to the development of "all-weather," high-voltage test programs, according to Ohio Brass.

Included in the lab's equipment are two 750-kv transformers and 3,000-kv impulse generator.

Moloney Enters Metal-Clad Switchgear Field . . .

Moloney's new Switchgear Manufacturing Division, which is located in newly-acquired facilities near their St. Louis transformer plants, will produce air magnetic metal-clad switchgear for both indoor and outdoor applications in all standard 5- and 15-kv breaker ratings. J. J. Mullen, Jr., President of Moloney Electric, reports that production will begin immediately with delivery available in early fall.

Innercooling by use of hollow primary conductors with an orifice cut in the top to allow a continuous circulation of air for cooling of main current is one of the special features included in the new switchgear, according to Mullen. Several other features listed are: encapsulated instrument transformers, breaker mounted auxiliary controls, dual breaker safety interlocks, interphase isolation (obtained magnetically between phases by the cores and electrically in 5 kv by molded glass polyester and in 15 kv by

porcelain insulation around the primary disconnect openings), and full door-height instrumentation.

Continental Copper Dedicates Two New Plants . . .

Continental Copper & Steel Industries, Inc. recently dedicated the first two major plants (built at a cost of nearly $10-million) of a projected multi-plant, 63-acre manufacturing complex at Linden, N. J. C. C.'s president Mortimer S. Gordon announced that the two plants built and operated by the Co.'s Hatfield Wire and Cable Division included:

1. An electronically-controlled and entirely automated 45,000-sq ft copper rod rolling mill—operated by only three men—which can turn out in eight hours enough 5/16-in. copper rod (from which wire is drawn) to stretch from New York to Washington, D. C.

2. An adjoining plant which combines a rubber mill (capable of manufacturing five tons of rubber compound an hour) and a wire in-

Giant High-Speed "Cable Closer" automatically twists taped or shielded conductor wire into long, continuous reels of heavy, multi-conductor cable at new $7-million rubber insulating mill of Continental Copper & Steel Industries, Inc. at Linden, N. J.

sulating mill that can turn out nearly 1,000 miles of finished wire and cable a day.

Already "blocked out" on the Linden site blueprints, Gordon said, is space for a 100,000-sq ft wire drawing mill, a plant for production of plastic coated wire and cable, office buildings and, eventually, a refinery to produce electrolytic copper bar from ore.

Pennsylvania Transformer Plans Florida Plant . . .

Pennsylvania Transformer Division, McGraw-Edison Co. has announced plans for construction of a $2-million transformer manufacturing plant in Tampa, Florida. W. E. Kerr, president of the division, stated that the new facilities will be used for the manufacture of pole-type transformers. The plant, which should be in operation by the end of the year, will be a complete manufacturing facility rather than just an assembly point. Acquisition of the 12-acre site is subject to approval by the Tampa Industrial Park Management Board.

Sales Briefs

A Cleveland office has been opened by **Harvey Aluminum** to serve metal users in the Ohio area. **Gene Stevens** has been named to manage the new office, located at 3691 Lee Road, Shaker Heights, Ohio. General offices are located in Torrance, California.

Larson Equipment Co., Los Angeles, Calif., has been appointed the southern Calif. distributor for **Koehring, C. S. Johnson, Parsons, Kwik-Mix, Ko-Cal, Buffalo-Springfield,** and **Flaherty** construction equipment, according to an announcement from **Koehring Company**, Milwaukee, Wis.

An agreement reached today between **The Canadian Fairbanks-Morse Company Limited**, of Montreal, and **Fairbanks, Morse & Co.**, Chicago, returns to the American Co. the ownership and use in Canada of the Fairbanks, Morse name and trademarks, **Thomas G. Lanphier, Jr.**, President of Fairbanks, Morse announced.

The **Connecticut Hard Rubber Co.** announced the appointment of **The Prehler Electric Insulation Co.** as the distributor for its line of silicone rubber insulating tapes.

Worthington Corp. has appointed three new distributors of industrial pumps and compressors: the **Alameda Compressor Co.**, Los Angeles, Calif.; **Bews Company**, Phoenix, Ariz.; and **Pace Turpin and Co.**, Salt Lake City, Utah.

The **Fisher-Pierce Division** of **Sigma Instruments, Inc.** has appointed **Tate and Co.** as a sales representative for Texas. **Tate and Co.** will maintain offices in Dallas, Fort Worth and Houston. **Fisher-Pierce** also appointed **Electric Power Accessories Co. Limited** as a sales representative in Ontario, Canada.

The **F & W Ursem Co.**, Cleveland, Ohio, has been appointed exclusive distributor in Cleveland and northern Ohio for the **Lenz Co.**, of Dayton, Ohio.

Seastrom, Inc., Indianapolis, has been appointed a distributor for most of Indiana by the **Parsons Co.**, Newton, Iowa, manufacturer of trenching equipment.

MEN OF POWER

Moloney Electric Company announces the appointment of **Donald E. Spackler** as general manager of Moloney's new Switchgear Division. Spackler, who has been associated with Moloney since 1950 and for the past seven years a vice president, played a key role in the development of the company's 5- and 15-kv metal-clad switchgear. Prior to working on this new development Spackler was primarily concerned with coordinating transformers and switchgear for unit substation sales.

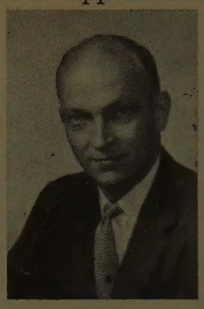
Spackler

* * *

Pacific Gas and Electric Company has announced three executive appointments: **O. R. Doerr,** vice president in charge of sales, was made vice president and assistant to the company's general manager; **R. W. Joyce** was elected to the new position of vice president in charge of commercial operations; and **W. D. Howell** was appointed general sales manager.

Mr. Doerr moved into the PG&E sales department in 1930 and later was appointed general sales manager, becoming vice president in 1948. Mr. Joyce has been manager of the commercial department of the company since 1954. As vice president he will be responsible for all commercial sales and customer service operations of PG&E. Mr. Howell has been manager of commercial, industrial and agricultural sales since 1958. He joined PG&E in 1926, and was made manager of the company's Berkeley district in 1946. Later, he was appointed sales manager of the East Bay Division.

Allis-Chalmers has announced the appointment of **Charles W. Parker, Jr.** formerly director of sales promotion, to the newly created position of general marketing manager, New Products department. He will have complete marketing and sales responsibility for the company's new products, materials and processes, coming principally from the central research division and the firm's other development centers. He has been with Allis-Chalmers since 1947, and was manager of the Richmond (Va.) district sales office before becoming manager at Philadelphia in 1957.



Parker

* * *

Frank E. Lucking has been elected commercial vice president of California Electric Power Company by the utility's board of directors. He has been associated with Calectric for the past 37 years and has served as commercial

"Right time" for trouble

Factory tests assure dependability of every O-B 6-inch suspension unit

If there's trouble to be had, *we* have it, not you! *Every* 6-inch porcelain disc, before assembly, is subjected to a three-minute electrical flashover test to confirm soundness. *Every* insulator is tension-tested in excess of ASA requirements. *Every* insulator, after assembly and just prior to packing, is again electrically tested for final assurance.

Each day, inspectors take random-selected insulators from production and send them to the Laboratory for destructive M&E test. This determines their ultimate quality. From these findings, manufacturing control is guided. Monthly, enough perfectly good insulators "go to their death" to build two hundred 12,000-volt deadends.

This care doesn't show on the outside of an O-B insulator. It doesn't show on the price tag. It just doesn't show - - period!

It doesn't show, at least, until your O-B-insulated deadends keep going for years and years without any further attention after the day they were built.

This knowledge of the insulator business, and sense of responsibility toward a product, *can't be bought* elsewhere for any price, but *can be bought* from Graybar at standard prices. Remember this when you place your next order.

OHIO BRASS COMPANY, MANSFIELD, OHIO

Ohio Brass

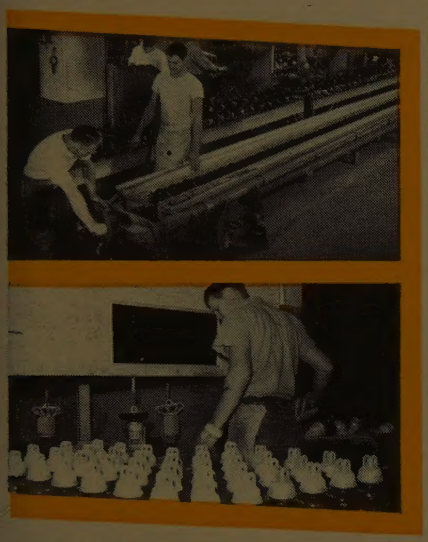
HOLAN

10135-H

Distributed by GraybaR ELECTRIC COMPANY

Porcelain discs for all 6-inch deadend insulators undergo this automatic continuous flashover test for three minutes. In this way, sound dielectric is assured before proceeding to assembly.

Insulators are linked in long strings and tension-proof-tested at values above ASA requirements. This imposes uniform mechanical load on every unit, and assures detection of any defective piece.



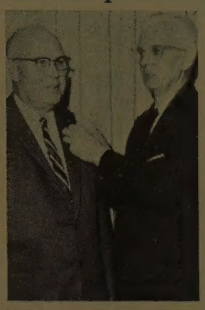
Assembly operations and handling through the factory might accidentally damage an insulator after its inspection tests. Therefore, as final assurance, each unit is given a prolonged flashover test on this electrical "reel" as a last step before crating and shipment.

Standard M&E test consists of pulling an insulator to destruction while under full electrical load. This permits an evaluation of ultimate strength as well as consistent behavior. It also reveals the desired condition of simultaneous electrical and mechanical failure, as opposed to premature loss of either property. A definite percentage of output is tested daily in this fashion to provide constant production control. Enough insulators are destroyed monthly to build two hundred 12,000-volt deadends.

manager since 1958. He will be responsible for the company's sales, customer services and public relations activities.

* * *

Warren H. Chase (left) has been elected president of the American Institute of Electrical Engineers. He is shown here with **Clarence H. Linder,** outgoing president. Mr. Chase, elected president of the world-wide institute by a mail vote of its 57,000 members, is vice-president of the Ohio Bell Telephone Company. He will take office this month.



Chase and Linder

* * *

Edward G. Twohey, former president of the Lawrence Gas Company, has been elected by the directors of the Merrimack-Essex Electric Company as president of the firm, a subsidiary of New England Electric System. He succeeds **Edward C. Bower** who has been assigned other duties in the New England Electric System as president of The Narragansett Electric Company.

* * *

Lamar Kelley has joined the Management Consulting division of Ebasco Services Inc. as director of personnel management services. He was formerly with American Metal Climax, Inc. as director of personnel services and, earlier, a director of employee and public relations for Allegheny Ludlum Steel Corporation.

* * *

William H. Peterson has been promoted to electric superintendent of Pacific Gas and Electric Company's East Bay Division. He succeeds **William T. Hannum** who is retiring. Peterson began his career with PG&E as a powerhouse operator in 1935.

* * *

Dr. A. Eugene Schubert, formerly manager of G. E.'s Chemical Materials department, has been named general manager of General Electric's Power Transformer department, Pittsfield, Mass.

MEN OF POWER BRIEFS

John Adams has been elected assistant secretary and assistant treasurer of Middle South Utilities.

Joining Duke Power Company's public relations department in Raleigh is **Henry W. Cheney, Jr.**

J. Brady Stoughton, Jr. was named Line Material's new South Atlantic region manager.

New Jersey Power & Light Company has announced the appointment of **Robert O. Brokaw** as assistant general attorney.

Elected assistant vice president of United Illuminating Company is **Eben Haskell.**

Subox, Inc. has appointed **F. C. Clatterbaugh** as sales representative in western Iowa and Nebraska.

Matt Anderson has been named chief industrial engineer of the Hapco Division of Hubbard and Company, Pittsburgh, Pa.

H. M. Harper Company has announced the election of **Charles L. Harper** as a member of the board of directors.

Appointed plant engineer of the Hastings Mill at Anaconda Wire and Cable Company is **Rolland Jay Westcott.**

Richard D. Dalley has been appointed Fuel Specialist for New Jersey Power & Light Companies.

Westinghouse Electric has named **Walter E. Benoit** works engineer of their atomic equipment. Other appointments are: **A. J. Mei** as programs coordinator, and **C. E. Anthony** as manager of the order service department.

S. R. Hill has been appointed central region sales manager for the air conditioning division of Westinghouse Electric Corporation.

Assuming the duties of General Sales Manager of the Potomac Edison System is **George T. Sanders.** The company has also announced the appointment of **John P. Coblentz** as manager of Industrial Power Sales and Engineering.

William K. Smith, former superintendent of the Distribution Underground Construction Division of Union Electric Company, has been named superintendent of their new Safety Department.

CALENDAR OF EVENTS

July 25-Aug. 10—1961 Chicago International Trade Fair, McCormick Place, Chicago, Ill.

Aug. 7-11—Western Resources Conference, Colorado State University, Ft. Collins, Colo.

Aug. 16-18—APPA Accounting and Finance Workshop, Ambassador Hotel, Los Angeles, Calif.

Aug. 23-25 — AIEE Pacific General Meeting, Hotel Utah, Salt Lake City, Utah.

Sept. 5-8—Woodward Governor Prime Mover Control Conference, Rockford, Ill.

Sept. 6-8—AIEE-IRE-ISA Joint Nuclear Instrumentation Conference, North Carolina State College, Raleigh, N. C.

Sept. 10-13—Rocky Mountain Electric League Fall Convention, Jackson Lake Lodge, Moran, Wyo.

Sept. 12-14—Eastern Wood Pole Conference, Syracuse University, Syracuse, N. Y.

Sept. 14-15 — AIEE-ASME Engineering Management Conference, Hotel Roosevelt, New York, N. Y.

Sept. 20-21—P.I.P. Workshop Conference, Brown Palace Hotel, Denver, Colo.

Sept. 20-22—NELPA Annual Business Meeting, Sheraton-Portland Hotel, Portland, Ore.

Sept. 20-22—Annual National Electr Farm Power Conference, Leamingt Hotel, Minneapolis, Minn.

Sept. 24-27—AIEE-ASME Nation Power Conference, St. Francis Hot San Francisco, Calif.

Sept. 24-29—National Technical Co ference, Hotel Chase-Park Plaza, S Louis, Mo.

Sept. 25-28—Industrial Building Expos tion & Congress, New York Coliseu New York, N. Y.

Sept. 27-29—MVEA Sales, Rural Home Service Conference, Preside Hotel, Kansas City, Mo.

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